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IN OUR NOVEMBER - DECEMBER ISSUE

The Changing World of Communication, by Donald C. Power, chairman and chief executive officer of General Telephone & Electronics Corp.; The Helicopter Soars into the Blue, by Stanley Hiller, Jr., president of Hiller Aircraft Corp.; and Our Changing Farm Scene and the Implement Market, by William J. Grede, president of J. I. Case Co.

Setting records in a flash



THIS IS
GEN TEL

The tiny flashbulb is mighty useful and popular—Americans use over a million a day.

Far and away the leading manufacturer in the steadily growing flashbulb business is the Photolamp Division of Sylvania, subsidiary of General Telephone & Electronics.

Behind their bright sales record is an equal record of research and development. In the past few years, Sylvania has introduced many major improvements in flashbulbs, plus important new products in many other fields of photographic lighting.

General Telephone & Electronics today brings together the talents of many people and the facilities of many companies—all working to advance communications through sight and sound.

By developing new methods and new products for communications, homes and industry, General Telephone & Electronics is working for what it believes is bound to be—a growing future in a growing America.

General Telephone Operating Companies in 31 states
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GENERAL TELEPHONE & ELECTRONICS

730 Third Avenue, New York 17, N.Y.



A large industrial chemical plant, likely a petrochemical facility, is shown in the background. The image features several tall, dark cylindrical storage tanks and a complex network of thick, light-colored pipes. The sky is overcast, and the overall atmosphere is industrial and technical.

Celanese

CREATING VALUES
WITH CHEMISTRY

CELANESE DOUBLES ACRYLATE CAPACITY TO MEET GROWING MARKET NEEDS

PAMPA, TEXAS: Celanese has begun a major expansion of its petrochemical plant here. It will provide, by the end of 1960, an annual capacity of 30-million pounds of acrylates.

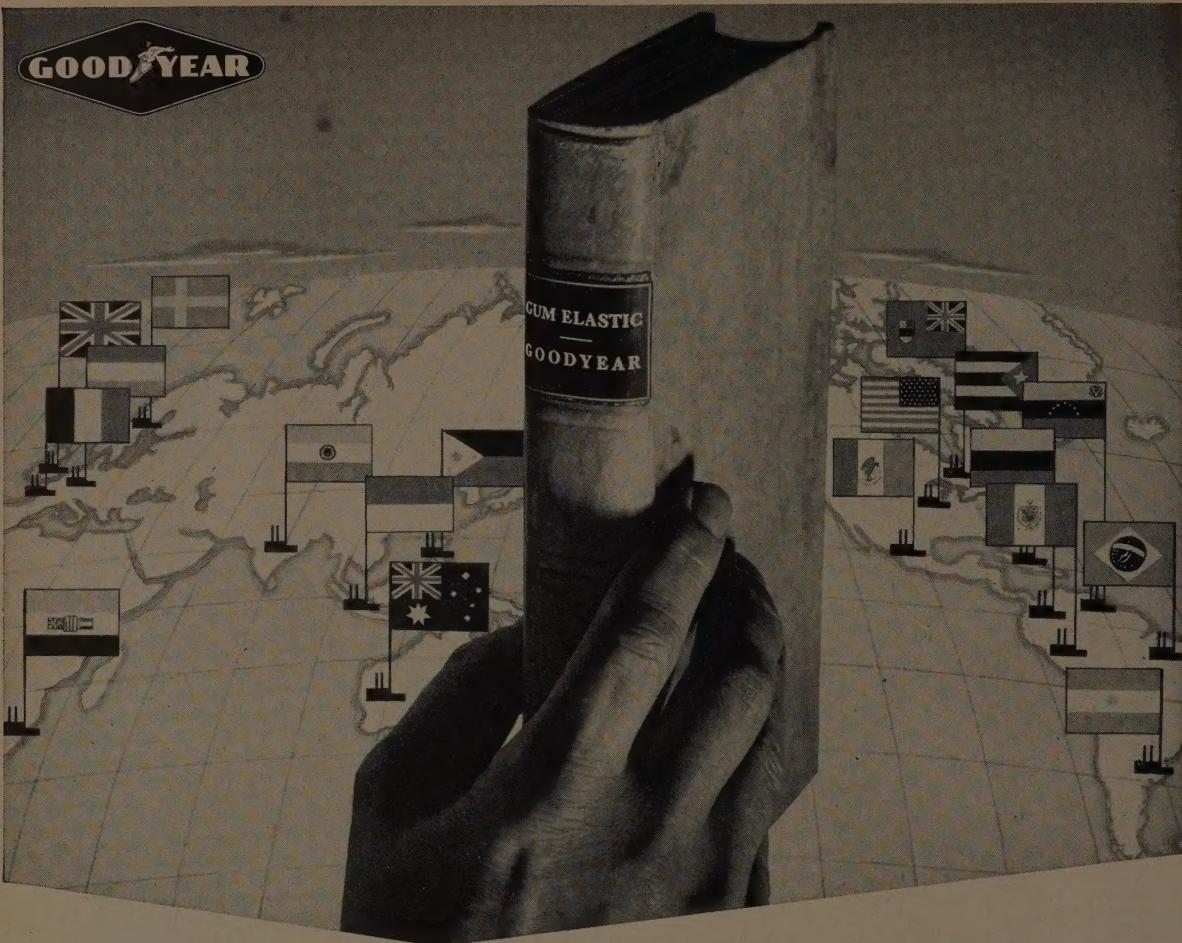
The market for higher acrylate esters is one of the fastest growing in the chemical field. Sales this year are estimated at 65 million pounds—twice the volume marketed only four years ago.

Acrylates are basic chemical tools useful in building a variety of new and better products. Acrylic coatings, for example, eliminate the need for priming metal surfaces before painting.

Acrylic-based floor polishes give clear, scuff-resistant finishes. And these versatile petrochemicals are being increasingly used to improve textiles, plastics, paper, adhesives, and countless other products.

Meeting industry's growing acrylate needs is part of the continuing Celanese program of expansion and diversification in chemicals and plastics. For our technical manual on acrylates, please write to: Celanese Corporation of America, 180 Madison Avenue, New York 16, New York.

Celanese®

GOOD
YEAR

Recipe for a Ten-Billion Dollar Industry

In a kitchen "laboratory", mix rubber with sulphur. Try a pinch of white lead. Heat on a coal-fired cookstove. Fight failure with courage, year after year, till one day rubber gives up its secret.

With this spartan approach, 121 years ago, Charles Goodyear produced the world's first vulcanized rubber, with stamina to slug it out against wear and climate. The new product would serve mankind in a multitude of ways. The new industry would make thousands of jobs, put millions of dollars into circulation in country after country.

In 1853 Charles Goodyear wrote a book about his discovery, "Gum Elastic and Its Varieties" could not be a best-seller. Only six copies were printed. But it survived the years. In France recently the grandson of the original owner brought his heirloom copy to Goodyear executives planning the new tire plant at Amiens. A warm gesture of friendship towards Goodyear's expanding European facilities.

From Charles Goodyear's crude experiments came the inspiration for today's imagination, research and development—writing a recipe for the world of tomorrow.

Lots of good things come from

GOOD YEAR

THE GREATEST NAME IN RUBBER



THE FINANCIAL

Analysts Journal

Volume 16, Number 5
September-October 1960

GROWTH

THE HOTTEST WORD IN WALL STREET

Probably there is no single word which is more closely associated with the business and industrial economics of the Frenetic Fifties, and now it bodes to become equally prominent in the Scientific Sixties, than growth—spelled G-R-O-W-T-H!

There's no chatter on the Wall Streets of America where *growth* is not part of the conversation. There's no market letter which doesn't refer to *growth* at least once per issue. There's no book about the economic, business and investment aspects of our time without numerous mentions of *growth*; indeed some books devote a chapter or more to *growth*. There's no modern-day speaker, whose subject touches on finance and commerce, who would dare to climb a podium and then skirt the subject of *growth*. And certainly there's no respectable business and/or financial magazine (this one included) which fails to "sign up" an author who is conversant with *growth*.

Truly, GROWTH, for all it implies in the money marts, has become a giant among words. On all financial ramparts *growth* betokens a measure of magic. And, parenthetically, we too are devotees of *growth*.

Early this summer we had a front-row seat at what appears to be another facet of this orbit-circling phenomenon. Briefly, this latest development (growth-oriented of course), took the form of an on-the-spot seminar, a well-planned survey of the natural gas industry, with Texas Eastern Transmission Corp. as the self-appointed spokesman. Now, to be sure, corporate junkets (as this was) are nothing new. The nation's press has several corporate invitations weekly to visit industrial plants and get first-hand impressions. But to design an in-the-field (Louisiana) *industrial* survey exclusively for Financial Analysts is indeed something new on the corporate horizon. But, as our Texas Eastern hosts pointed out, there is "an inherent danger" from the view-point of the company. For when anyone goes into another's home, and spends several days with the host, there are bound to be secrets that leak out. Texas Eastern realized this, and only asked Financial Analysts kindly to remember it when writing reports and/or discussing the company publicly.

Slowly but Surely

So, to the Financial Analyst who, just a relatively few years ago, had difficulty in getting corporate brass to talk, this is indeed something new to be invited into the "home," given a set of keys, and asked to sit on the ground floor. We think this is decidedly a good thing—and if pressed would express the hope that this will become the harbinger of more similar industry seminars.

Now, from a cursory investigation, we believe that this new facet of industrial education (as opposed to company unveilings) for Financial Analysts, originated with the Education Committee of *The New York Society of Security Analysts*. For first—and we're open to argument—it was Socony Mobil Oil Co. which had the foresight to develop a program with the Analysts that outlined the industry's operations in detail, from origin to end-product. And this did much to cushion the blow of dawning disenchantment as the petroleum industry's inventory shortages swelled to profit-eroding surpluses.

Subsequently—eyeing the constructive comments from the financial community, echoing from this program—Daystrom, Inc. decided to present a similar series on the then rapidly emerging Electronics Industry, which was, to the uninitiated, a jumble of ions, ergs and amps bouncing back and forth through wafers of germanium and silicon, called diodes and transistors.

Attracted by these reverberations, Allied Chemical, a sleepy giant then widening its horizon under the guidance of a dynamic new management team, undertook to dissect the complications of, and point out, the *growth* potential of that industry. The response was so impressive that it was

(continued on page 38)

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Looking Ahead with Phillips Petroleum . . .

A MUTUAL FUND IN ONE OIL COMPANY

As a greatly diversified oil company, Phillips may be compared to a mutual investment fund. It engages strongly in three industries—oil, natural gas, and chemicals. Products and services from these industries are used by nearly every other industry as well as by the consuming public in general, and Phillips' broad participation thus gives the company unusual stability.

Phillips leads the petroleum industry as a (1) producer of natural gas liquids, most versatile of hydrocarbons, (2) seller of natural gas, (3) producer-marketeer of liquefied petroleum gas, (4) manufacturer of nitrogen fertilizers, (5) supplier of raw materials to the rubber industry, and (6) in atomic energy activities. The company is among the leading two or three oil companies in research, patents, and chemicals production . . . besides fertilizers and rubber it is a major supplier of plastics and of raw and intermediate materials for these products and of carbon black, synthetic fiber ingredients and many specialty chemicals.

Why could Phillips attain this diversification which contributes uniquely to its stability and growth and to its favorable future prospects?

The answer lies chiefly in Phillips' position

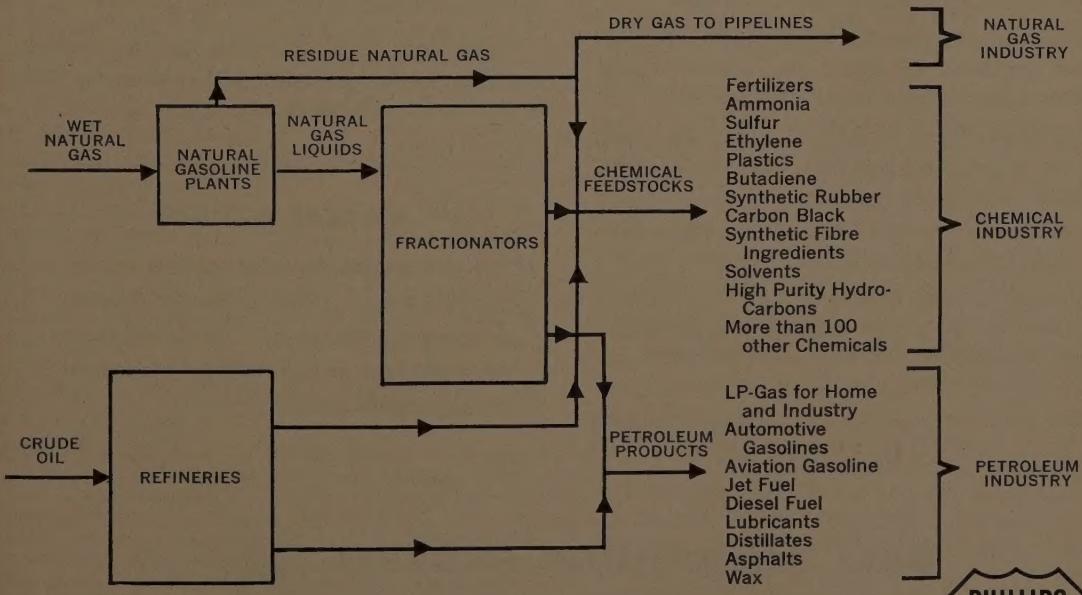
following World War II that permitted it to take advantage of expansion in three growth industries—the conventional oil business, natural gas, and chemicals.

With substantial crude oil reserves and huge supplies of natural gas and natural gas liquids—ideal building blocks for both motor fuels and chemicals—and with its background in research and processing, Phillips' position in all three industries was distinctively strong. Rapid growth in demand for products of these industries touched off a chain reaction of profitable diversified projects. Phillips' expansion even in the conventional petroleum business was especially enhanced because it could inject its large supplies of natural gas liquids into its otherwise normal processing and marketing activities.

Seizing these opportunities to diversify required substantial investment over the postwar decade, but the result is the establishment of many sources for earnings which will be advantageous over future years.

Yes, as an oil company, a natural gas company, and a chemical company, Phillips does offer a mutual fund in one company. You can look ahead with Phillips.

How Phillips upgrades its materials into many diversified profit sources in three industries



PHILLIPS PETROLEUM COMPANY, Bartlesville, Oklahoma



DATA·phone

A NEW TELEPHONE SERVICE FOR THE NEW ELECTRONIC ERA

Bell System's Data-Phone service enables modern business machines to "talk" to each other over regular telephone lines

MORE and more businesses are using complex computers and other electronic machines to process current facts and figures.

Where plants, warehouses, branches or offices are located in different cities and states, there is increasing need for a quick, economical way to transmit payroll, inventory, billing and other data from place to place.

This is especially true where the policy is toward decentralization of various activities.

In serving this communication need, the Bell System has come up with a new and extremely flexible method called DATA-PHONE service.

The great advantage is that business data goes over the same telephone lines you use for telephone conversations.

The new service uses Data-Phone sets to link customers' business machines—handling paper tape, magnetic tape or punched cards—to regular telephone lines. This machine-furnished data can be handled over telephone lines at speeds up to 1200 bits per second.

The customer pays for each Data-Phone call just like a Long Distance call for any period he wants.

THUS, in addition to our teletypewriter service, designed for low-speed operations, and our leased-line offerings allowing literally any speeds, we can now offer the added flexibility of our vast Long Distance telephone network for data transmission.

In providing the communication lines and Data-Phones, the Bell System is working right along with manufacturers who are developing the business machines to complete the service.

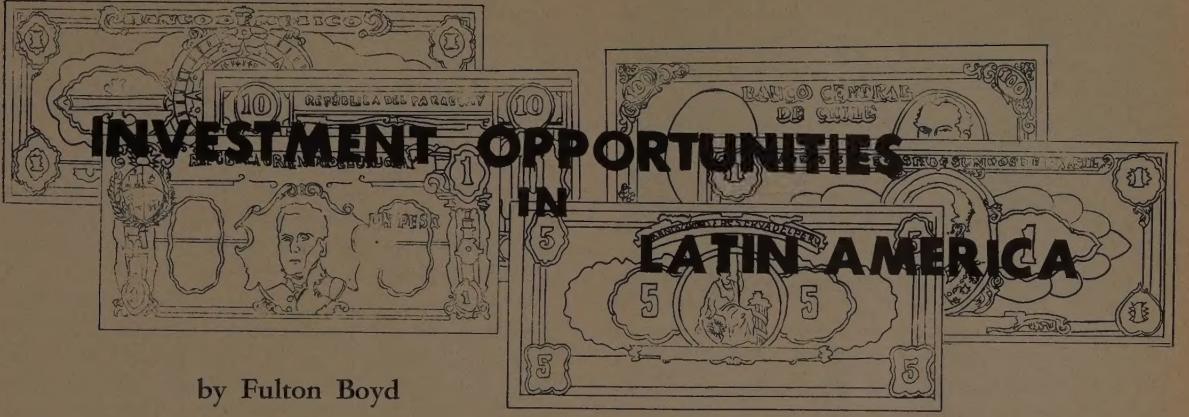
It all adds up to an interesting and exciting opportunity to render a new data communications service for our business customers.

A GREAT FUTURE

It is not improbable, within the next decade, that the amount of communication between electronic business machines in different cities will be as large as telephone communication between people.

BELL TELEPHONE SYSTEM





INVESTMENT OPPORTUNITIES IN LATIN AMERICA

by Fulton Boyd

BUENOS AIRES — Latin America has always been something of an economic enigma. In terms of variety, quality and abundance of natural resources, it is richer than any comparable area in the world. Labor is plentiful and cheap. Yet in spite of an apparent great potential, Latin America has failed to develop into the industrial complex which would seem to be warranted by its wealth of human and natural resources; today it is still mostly an economically backwards area. Local skeptics have a popular saying: "Latin America is the 'Land of the Future,' but it always has been, and it probably always will be."

It will be the object of the first part of this article to point out, very briefly and generally, the circumstances which have prevented or retarded the growth of Latin America, and to show how these are gradually changing. As a matter of fact, there is a combination of factors now at work which, if they continue uninterrupted, will change the entire economic picture in Latin America during the next 10 to 20 years. As a result, the growth rate in this area during the sixties and seventies will very probably exceed that of any other area in the world, including even the hypothetical rate which Khrushchev claims Russia will achieve.

For the sake of brevity, this article will concern itself only with the seven countries (Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay) which signed the Latin American Common Market Agreement last February. These seven countries collectively represent by far the majority of the total wealth, population, area and development of Latin America, and any progress and prosperity which they achieve in the future will

almost certainly be felt among the other Latin American republics.

This article will also commit "the cardinal sin" of seeming to discuss these seven countries as if they were one. Actually, although it is not generally realized, the differences between these countries in terms of geography, racial make-up, climate and resources are far greater than those between the countries of Western Europe. About the only things they have in common, as a matter of fact, are somewhat similar histories and languages (Spanish and Portuguese). It is principally a matter of history and geography which has retarded economic growth in Latin America, and it is the common problems arising from these circumstances which this article will discuss collectively, not the individual countries.

The greatest handicap to economic progress has been an unfortunate history. Instead of one vast, homogeneous, integrated area, Latin America is sharply divided, most of these countries have only one or two major crops or minerals available for export, and virtually the entire economy of each country is dependent on the international market for its particular commodity. Coffee still dominates Brazil, for example, as tin does Bolivia, bananas, Ecuador, and oil Venezuela. Until very recently, the economy of each individual country has been run pretty much along the same lines as in the old colonial days, with a small but powerful aristocracy controlling the principal wealth of the country, and the remainder of the population consisting of peons or peasants working the mines or properties.

Export-Import: A Way of Life

Naturally, very little middle class developed under these circumstances, and as a result the market for all but the most essential consumers' goods in each country has been extremely limited. There has been, therefore, no basis for establishing mass production industries. On the contrary, it has been far more economical to export raw materials to industrialized countries and to import

Fulton Boyd is a Financial Analyst (N.Y.S.S.A. member) who has worked for investment firms in Rio de Janeiro and—since 1956—has been associated with Holt Ruffin & Cia., S.A., in Buenos Aires. Mr. Boyd traveled to Brazil, Chile and Uruguay to gather material for this article. Holt Ruffin, which specializes in investment and short-term financing, and has offices in several Latin American countries, represents the financial interests of Sir Victor Sasson in the Western Hemisphere. Mr. Boyd is a graduate of Princeton University.

their low-cost, mass-produced finished goods in return.

The status quo of these sleepy, colonial Latin American republics was rudely upset by external conditions resulting from World War II and post-war developments, together with an internal population explosion.

During the war, commodity prices and export volumes soared and maintained high levels for a prolonged period. This was an unprecedented bonanza for Latin America. Prosperity of sorts even filtered down to the lower classes, creating eventually a much broader middle class than had ever existed before. Since the end of the war, however, commodity prices in general have shown no improvement; many, in fact, have declined. Nevertheless, the larger and more prosperous populations of Latin America had become confirmed consumers on a much higher level than before the war. This trend was not to be reversed, and it had a double-barreled effect: there was less national product left over for exports at cheaper unit prices, and at the same time there was a sharply higher demand for imports.

With the single exception of Venezuela—which was saved by an oil production boom—every Latin American country underwent a more or less severe foreign exchange crisis during the early fifties, having by that time imported so much more than they exported that they had exhausted their foreign exchange surpluses accumulated during the war and, finally, all their credit too.

The subsequent pattern followed by each country was very similar in all cases, varying only in details. It was, for one thing, unthinkable that living standards should be lowered; at the same time, there were no funds with which to import the amenities of life to which Latins had become newly accustomed. The only answer was to cut off imports and simultaneously to industrialize and manufacture these goods locally; regardless of the soundness of the economics of large-scale manufacture in limited markets.

Each country set about its own industrialization pro-

gram independently. Strong tariff protection was set up to protect foundering new local industries from foreign competition. The wastefulness of inexperience was tremendous, and of corruption equally so. Production costs were high; quality and quantity were low. In spite of many near disasters, however, somehow the various industrialization programs took hold. *Table I* shows what progress in certain basic industries has been made between 1954 and now, and what further progress is expected to be made by 1965. It also points out how far Latin America must go before it will achieve a standard of living equivalent to that of Western Europe or the U. S. today.

With industrialization there arose a new set of problems that had not exactly been anticipated. By and large, the industries set up in Latin America during the fifties were light consumers' products industries, with relatively little basic heavy industry. Therefore, there continued to be the same heavy dependence on imports, with emphasis now principally on semi-finished materials and capital goods, rather than on finished consumer goods. However, there was a bigger and more important difference in this new trade pattern than a mere change in the composition of imports.

Previously, imports of finished consumer goods could be cut back during lean years of reduced foreign exchange, and the economy as a whole would not suffer severely. But once the wheels of industry were turning, imports of raw materials had to be brought in regularly, rain or shine; for if an industry had to be closed down because of lack of imported raw materials, it meant unemployment, and this is one thing above all else to which politicians do not like to be a party. Moreover, the industrialization process, taking peasants off the farms and putting them to work in factories, had the tendency to create a far greater middle class and a consuming lower class than had ever existed before; and with this came an increase in demand for consumer goods far beyond anything originally anticipated. There-

Table I — COMPARATIVE PROGRESS

	Argentina	Brazil	Chile	Mexico	Paraguay	Peru	Uruguay	Total	United States	Western Europe
Population (in millions)	1954	18.9	61.0	6.5	28.9	1.5	9.0	2.8	128.6	
	1960	21.1	66.0	7.5	32.3	1.7	10.5	3.0	142.1	180
	1965	23.5	72.0	8.1	36.0	2.0	12.0	3.3	156.9	257
Gross National Product (in millions, dollar equivalent)	1954	5,000	15,000	1,750	5,300	150	1,200	650	29,050	
	1960	6,000	15,000	2,800	9,800	175	1,275	700	35,750	500,000
	1965	9,000	15,000	3,200	12,000	200	1,750	750	41,900	300,000
Steel Production (in thousands of tons)	1954	250	1,200	43	609	—	—	—	2,102	
	1960	600	2,000	254	1,115	—	40	—	4,009	120,000
	1965	1,800	2,700	600	1,500	—	60	—	6,660	101,000
Automotive Production (thousands of units)	1954	—	—	—	—	—	—	—		
	1960	60	96	—	—	—	—	—	156	6,000
	1965	125	150	—	—	—	—	—	275	4,200
Cement Production (in thousands of tons)	1954	1,709	2,693	776	1,765	7	485	400	7,835	
	1960	2,400	4,346	867	2,638	14	600	470	11,335	63,000
	1965	4,000	7,200	1,200	3,000	18	700	582	16,700	90,000

fore, industries had to grow and multiply, further increasing the volume of dependence on imports of capital goods and semi-manufactured raw materials.

World's Fastest Growing Area

As could be expected, this process has been accompanied by wild inflations and sharp currency devaluations (see *Table II*). It is no wonder, therefore, that Latin America has seemed to be living in a state of constant crisis. This is no illusion. Population-wise, Latin America has been and continues to be the fastest growing area in the world, but it is not just this increase in the number of mouths to feed which is raising consumption so rapidly. The main factor is the creation of new economic classes, the raising of millions of families annually from bare subsistence-level living standards to a point where they can actually acquire a few of the simpler luxuries of life. It is creating a producing and consuming class where none existed before.

This is the great social evolution which industrialization has touched off in Latin America. As a long-range trend, it is still in its infancy, but the timing is most propitious. By great good fortune, the first steps have just been taken this year towards the formation of a Latin American Common Market (this was an inevitable development, but has been accelerated by the initial success of the "Inner Six" and "Outer Seven" Common Markets in Europe). At the same time, the U. S. has pledged itself to a "Latin American Marshall Plan" and recent events in Africa are tending to shift business interests away from that continent and towards South America.

Each of these developments individually has strong favorable implications for Latin America, and they are all taking place just at the moment when the internal socio-economic forces of Latin America have reached the ripest stage for rapid development.

LATIN AMERICAN COMMON MARKET

Last February, delegates from seven Latin American countries (Argentina, Brazil, Chile, Mexico, Paraguay, Peru and Uruguay) convened in Montevideo and signed a Latin American Common Market agreement. Within 30 days of the date, in which parliaments of three countries have ratified this agreement, it will go into effect between those countries; and the others may come along at any time later.

In general terms, this agreement is more similar to the European Free Trade Area agreement (EFTA—the "Outer Seven") than to that of the European Economic Community (EEC—the "Inner Six"). There is not as great a surrender of national economic prerogatives as the "Inner Six" have made; member countries are not required to adopt a common external tariff, but maintain freedom of action in shaping their respective commercial policies towards third countries; free movement of labor is not provided for; the possibility of leading up towards a "Federated States of Latin America" is in no way contemplated; and there are a number of escape clauses which could in certain cases limit the effective-



Fulton Boyd, the author, left, in conference with the president of the Buenos Aires Stock Exchange (Bolsa de Comercio), Sr. Juan Bautista Pena. The B.A. Bolsa is, in every respect, the leading stock exchange in Latin America. And under Sr. Pena's administration it has broken all previous trading records. The day after this photo was taken, trading passed the 2 million share mark for the first time in its 108-year history. Recent innovations in the B.A. Bolsa include: a tuition-free 10-week course on stocks, bonds, company analysis and trading activities for new investors, and the installation of a large electronic computing machine to process the increased trading volume more rapidly.

ness of the agreement. Nonetheless, the majority of local opinion seems to be that the agreement will be ratified within another year by most of the original members; that it will be effectively applied; and that it will ultimately achieve the desired results.

The time schedule is to reduce tariffs 8% per year, so that in 12 years they will be entirely eliminated between member countries. Naturally, there are to be no quotas and no discriminatory taxes or other fiscal measures. Reductions of tariffs are based on overall volume of trade; they do not apply as blanket 8% annual tariff reduction on all objects of trade. For example, tariff reductions on some items may be as much as 10% or 50% or 100% in one year, whereas other tariffs may not be reduced at all that same year; the only requirement is that total tariffs be reduced 8% during each year. It is a matter of inter-country negotiation during the year as to which tariffs are to be reduced and how much.

Economic Development From Within

The Latin American Common Market has, therefore, ample flexibility and a sufficiently long time element so that internal trade difficulties can be worked out during the period of its application. Furthermore, there is sufficient understanding of its potential benefits so that it has reasonably strong support from the responsible sectors of the various countries.

This support is further strengthened by the success which the European Common Market seems to be having; for, on the one hand the European experience provides a brilliant example of what can be done; while on the other, by changing European international trade patterns, so as to favor imports from the African and

Table II—DEPRECIATING CURRENCIES

Values of the various Latin American currencies in dollars on the free market

Year		Chilean "Escudo"	Brazilian "Cruzeiro"	Paraguayan "Guarani"	Argentine "Peso"	Peruvian "Sol"	Mexican "Peso"	Uruguayan "Peso"
		(dollars)	(cents)	(cents)	(cents)	(cents)	(cents)	(cents)
1954	High	3.77	2.08	1.75	4.00	5.26	11.55	37.1
	Low	2.70	1.31	1.54	3.57	4.51	8.01	31.0
	Close	3.30	1.37	1.63	3.57	5.26	8.01	31.9
1955	High	3.23	1.54	1.64	3.85	5.28	8.01	32.5
	Low	1.22	1.07	1.40	2.38	5.10	8.01	25.6
	Close	1.53	1.47	1.48	2.49	5.13	8.01	28.7
1956	High	2.20	1.61	1.50	3.51	5.26	8.01	31.4
	Low	1.50	1.12	0.85	2.19	5.10	8.01	23.3
	Close	1.66	1.53	0.89	2.67	5.25	8.01	27.0
1957	High	1.64	1.56	0.95	2.81	5.26	8.01	27.0
	Low	1.26	1.03	0.88	2.11	5.13	8.01	21.4
	Close	1.32	1.06	0.91	2.71	5.24	8.01	21.4
1958	High	1.26	1.09	0.91	2.73	5.26	8.01	21.3
	Low	0.80	0.58	0.91	1.30	3.51	8.01	9.3
	Close	0.89	0.73	0.91	1.43	3.56	8.01	9.8
1959	High	0.95	0.75	0.91	1.57	3.99	8.01	11.9
	Low	0.89	0.47	0.83	0.92	3.24	8.01	8.8
	Close	0.95	0.48	0.83	1.20	3.59	8.01	9.0
1960	High	0.95	0.55	0.83	1.21	3.67	8.01	9.1
	Low	0.95	0.51	0.83	1.20	3.59	8.01	8.7
	Close	0.95	0.53	0.83	1.21	3.64	8.01	8.8

Far Eastern colonies of member countries, to the detriment of imports from Latin America, it almost forces Latin American countries to do more business with each other in order to make up for the trade they will be losing from Europe.

At the present time, not more than 10% of Latin American import-export trade is done with other Latin American countries. Practically all of the remaining 90% is done with the U. S., Europe, Canada and Japan. As pointed out above, this is a result of historical and geographical factors which until recently have discouraged industrialization, basically through a failure to provide sufficient markets to warrant large-scale mass production industries. With a substantial middle class and a consuming lower class finally beginning to emerge in Latin America, and with the advent of a Latin American Common Market, this situation is changing completely.

Instead of having one market of 66 million population in Brazil, another of 30 million in Mexico, another of 21 million in Argentina, and so forth, with each individual market isolated from the others, the Common Market agreement will create a single market of some 140 million people. An American or European company need no longer wrestle with the problem of whether or not it would be worth while to install one or two or three small to medium-sized plants in various countries of Latin America. The combined market will justify one large, fully-integrated plant in any one of the seven Common Market countries from which all the other countries can be supplied without restrictions.

The two factors should make the establishment of a Common Market a simpler task in this area than in

Europe: (a) the present state of undevelopment, and (b) the fact that trade between countries within Latin America has been such a small proportion of their total international trade. Because of these factors, there are comparatively few industrial vested interests and virtually no cartels which stand to be affected by free trade.

Advantages Seen as Multiple

In Europe, for example, great sacrifices and readjustments had to be made by the inefficient high-cost Belgian coal mining industry, and by the Central-France and Italian steel industries, so that they could survive in the face of international competition resulting from the European Coal and Steel Community, which was the precursor to the Common Market. Besides such obstacles as these, generations of habit and reluctance to change have had to be overcome.

In Latin America, on the other hand, industry is generally so new and so inadequate in relation to local necessities, that there are no such things as long-established habits and trade practices. In many industries serious competition simply does not yet exist because local demand is so much greater than productive capacity. Therefore, it is difficult to see how a Common Market can create any serious dislocations, except in a few isolated instances such as perhaps the textile, sugar or wine industries.

On the other hand, the benefits to all which can be derived from large-scale industrialization and mass production are so great that the few instances where harm may be done shrink into insignificance. It is to be hoped that a good proportion of Latin America's raw materials—which in the past have been shipped abroad in ex-



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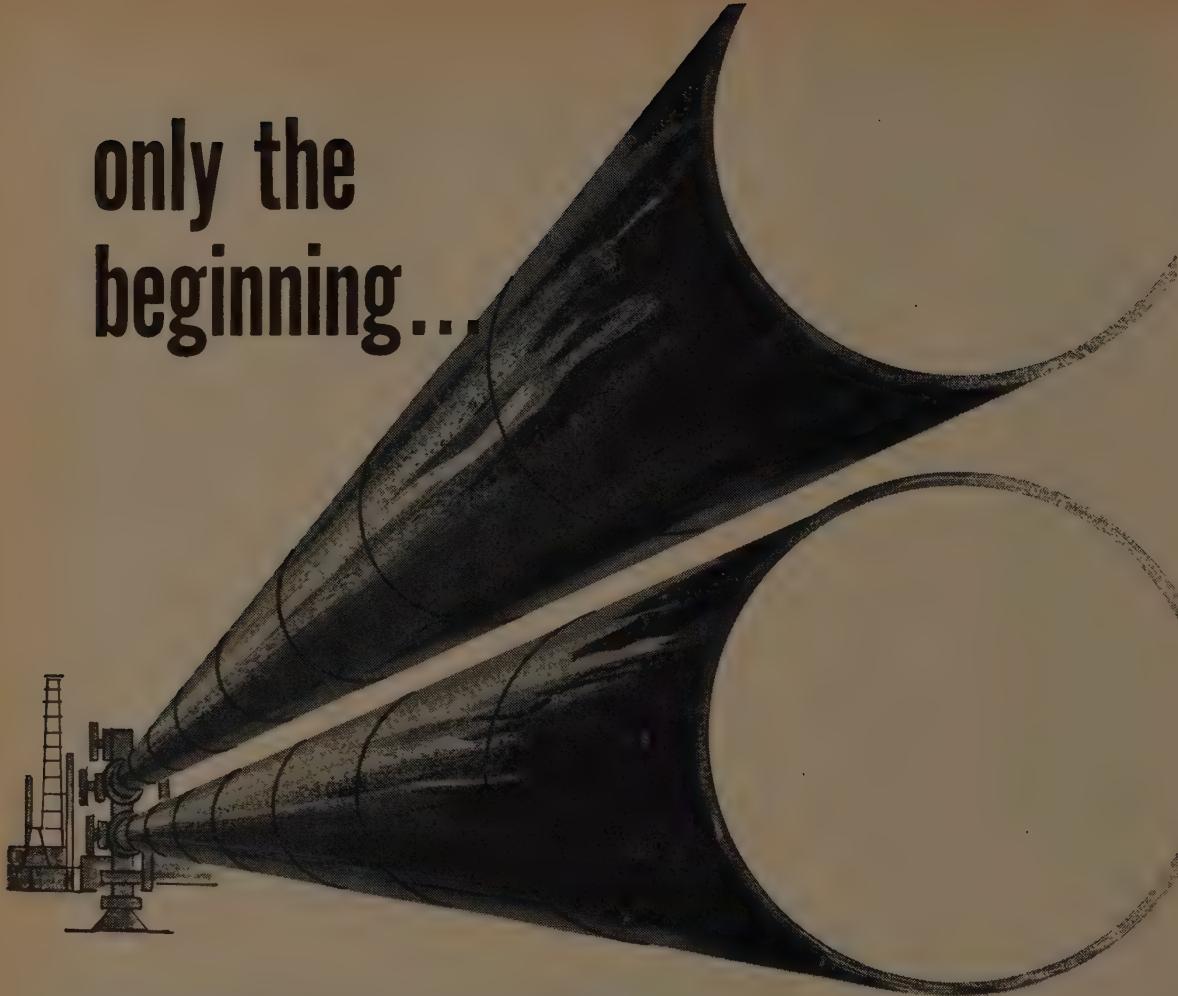
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Air Force TITAN breaks for the sky at Cape Canaveral. TITAN, with a range of 5500 miles, travels at 15,000 mph. U. S. Air Force Photo

Nuclear powered USS GEORGE WASHINGTON, POLARIS missile launching submarine, on test cruise in Long Island Sound. General Dynamics Corp. Photo



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change for finished goods—will soon be consumed by local industries which will be fully integrated from start to finish. The raw materials are available in abundance; the manpower is available; and at last a big consumer market is developing. Finally, the overall political situation (again speaking collectively) is at this moment more favorable towards foreign investment than it has been at any time since before the war. These circumstances should suffice to attract the capital to build the industries of Latin America.

The Outlook

Looking a long way into the future, it is possible to visualize a prosperity throughout the Americas which may some day approach the levels we know in the United States. With prosperity there should come a political stability and unity hitherto unknown throughout this Hemisphere. If this comes to pass, it will be a shattering defeat to communism throughout the free world. It is to be hoped, therefore, that not just governments, but companies and individual investors throughout North America and Europe will recognize and understand the transition which Latin America is presently undergoing.

What Latin America needs is capital, know-how, understanding and patience. With the present excess industrial capacity and slowing down of the growth rate in the U. S. and Western Europe, perhaps the industrialization of Latin America can provide a needed outlet for and a stimulus to our economies. There is a tremendous job to be done, but it should be rewarding in every way to all who participate in it.

A title such as "Investment Opportunities in Latin America" calls to mind the remark of Shelly Berman when he said: "I just have a second left, so I'm going to take this second and discuss the world." The investment opportunities in Latin America are almost as infinite. Here again this article will confine itself to a brief discussion of the seven members of the Latin American Common Market, and more specifically the opportunities offered by the stock markets in each of these countries. The general economic picture, recent history, taxes, negotiability of shares, and currency risks will be touched on briefly. Values will be stated in terms of their present dollar equivalents, not in local currencies.

ARGENTINA

It has been said that it is always easier to make more progress where some has already been made. If this is true, then Argentina is in the best position of all the Latin American republics for further development. For one thing, its economy is diversified; and unlike its neighbors, it is not dependent on just one or two commodities for its export business, which is currently running at about \$1 billion per year. Argentine beef is world-famous; hides and dairy products contribute substantially to foreign revenues; and wool is another leading export. Argentina is a major factor in international

trade in wheat and corn, as well as other cereals and linseed.

In addition to these principal commodities, Argentina also has surplus cotton, tung oil, sunflower seed, sugar, fruits, tea and wine available for export. Still largely unexploited are vast timber stands, a fishing industry with access to a continental shelf several times larger than that off the coast of the northeastern U. S. and Newfoundland, and rich ore deposits. Probably the most important factor of all in Argentina's development will be the petroleum industry, which has been retarded up until now by extreme nationalism. This was overcome in 1958, against considerable political opposition, when the government inaugurated a new oil program permitting foreign companies to enter the country and to develop the oil fields with their own capital and technicians. Such success has been had with this program that by mid-1961 Argentina will be self-sufficient in crude, thus eliminating the burden of \$300 million of oil imports annually. With any luck at all, Argentina may become a substantial exporter of oil by 1963 or 1964. Natural gas has been found in great abundance and a network of pipelines is being constructed. Argentina is developing one of the few large coal deposits so far discovered in all Latin America.

Best Railroads in Latin America

To supplement such a wealth and variety of natural resources, Argentina has the best railroad system in Latin America, the highest standard of living, the highest literacy rate, an almost completely white population, and a climate that ranges from nearly tropical in the far north of the country to nearly arctic in the far south.

The Buenos Aires Bolsa de Valores (stock market) is the oldest and best organized in all Latin America. Daily trading volume has recently passed the million-share-per-day mark (although this may not be so impressive in terms of dollar volume, since the average share sells at less than \$5.00). Times earnings ratios are low by U. S. standards; opportunities for growth are enormous; reasonably comprehensive financial information on listed companies is available; and, most important for foreign investors, the Argentine economy is in a state of rapid recovery under the administration of a responsible government. So, there is good reason to believe that its currency will remain stable from now on into the foreseeable future.

Until the Peron administration came into power, Argentina had an excellent capital market, capable of absorbing large new issues within a few days. As an example, in 1943 International Telephone & Telegraph issued the equivalent of \$90 million of 5% debentures, and they were oversubscribed in just a few hours. During that period the Argentine peso was considered one of the sounder currencies of the world, and international capital flowed freely into and out of the market.

The Peron administration—which lasted for 12 years, until 1955—was so corrupt and misguided that it virtually destroyed the Argentine economy. A 1945 foreign exchange surplus of about \$2 billion, plus income from

exports averaging \$1 billion per year, plus an additional \$1 billion which the nation did not have and had to borrow, were squandered on nationalization programs (railroads, utilities), non-productive imports, and the largest-scale corruption that South America has ever witnessed. Several private fortunes amassed by leading political figures in the Peron regime are said to run as high as hundreds of millions of dollars.

Internally, while costs mounted, because of increasing inefficiency, the disappearance of maintenance and new investment, and, principally, continual yielding to outlandish labor demands, consumer prices were held down by controls or government subsidy. Government employment rolls increased sharply (as an aftermath even today, despite an effort towards reducing government personnel, about 25% of the total labor force still works for one agency or another of the federal or provincial governments), as national income decreased; deficits were covered by printing more money. The Argentine peso, once a highly respected currency, decreased from a value of 26¢ in 1946 to 1.2¢ today. If, for example, an investor had put \$1,000 into Argentina in 1946, he would have received just under 4,000 pesos; this would have to have been multiplied by 21 times, to 83,000 pesos today, in order for the dollar value of his investment to remain intact.

Frondizi to the Fore

In 1955 the Peron dictatorship was overthrown, and a provisional military government ruled the country until May of 1958, when President Frondizi was inaugurated and took office. The provisional government had done nothing other than to eliminate as much as possible the threat of Peron's return—this was, indeed, a major task, particularly since the exiled Peron and his henchmen had far more resources at their disposal to finance agitation and terrorism than did the Argentine government to combat them. In short, the country was impoverished and chaotic in 1958, and there appeared to be very little reason for optimism concerning its future. President Frondizi was then an unknown element.

As it turned out, President Frondizi and his very able Finance Minister, Alvaro Alsogaray, have carried out a courageous recovery program, so severe in its effects that on a number of occasions the very survival of the administration was seriously threatened. Subsidies and price controls were eliminated; the government withdrew from labor unions, leaving labor free to fend for itself; 50,000 government employees have been dismissed; import and export controls were removed (although there is still a system of heavy duties on unnecessary imports); blocked foreign accounts were liberated; and the aforementioned highly controversial agreements were made with foreign oil companies.

It is not difficult to visualize the political problems President Frondizi and his finance minister have had to face in the application of this austerity program. Labor has suffered; wages during the last year and a half have risen 89%; while prices have gone up 117%. Purchasing power is down. Credit is extremely tight. A bare

minimum of concessions have been made to the armed forces. Demands of government workers and liberal politicians have been almost completely ignored. In fact, it would be difficult to name one sector of the population, other than the farmer (who had been severely oppressed under Peron) whose lot has been improved.

The situation in Argentina has now reached a point where it is possible to see the results of the austerity program and to have high hopes for the future. Inflation has been halted from a giddy 10% in one month (January 1959) to less than 1% per month. The peso has held steady on the free market at 83 to the dollar for over a year, and it now looks as if it will remain steady in the future. Foreign exchange reserves have been built up to half a billion dollars. Political unrest has subsided to occasional trivial incidents.

A new steel mill, erected for the government (principally by Armco) has just gone into production; its present capacity of approximately 600,000 tons annually will be doubled within another two years, and tripled by the mid-sixties. Vast investments in new power facilities are expected to eliminate the shortage of electricity within another two or three years. Substantial amounts of foreign capital have been coming into Argentina in the form of capital equipment for the petrochemical, metallurgical, pharmaceutical, automotive and many other industries. Best of all, the oil program has been immensely successful.

The capital market has shown substantial improvement too. Just a year ago it took a big effort to raise \$500,000 for a well-known concern. Today, amounts of \$5 million and more can be raised fairly easily, and in several years perhaps the capital market will regain its status of pre-Peron days.

On the stock market there are some 15 to 20 actively traded shares of well-managed companies whose daily volume runs between 10,000 and 25,000 shares each. Another 60 to 80 shares enjoy a daily volume of several thousand shares, and then there are over 200 shares listed with less activity, some of them with no trading at all, and many reaching only a few hundred shares a week.

The first group of shares are the most sought after, since they are the most easily negotiated, and they sell at the highest times-earnings ratios. *Table III* gives some examples.

Shares of intermediate activity range in price generally from 4 to 8 times earnings, whereas shares of limited activity are available as low as from 2½ to 6 times earnings. As a matter of fact, what determines price within these various categories is not so much earnings as dividends. A share which earns \$1.00 and pays the whole \$1.00 in dividends will sell at a higher price than a share which earns \$1.50 but pays only 50¢. This, plus the factor of limited trading volume, has led to some disconcertingly low prices for certain shares which in the U. S. would command times-earnings ratios of over 15 today.

E. R. Squibb & Sons Argentina (a pharmaceutical subsidiary of Olin-Mathieson), for example, sells at the

Table III — HIGHLY TRADED ARGENTINE SHARES

Name of Company	Business	Estimated Net Income per Share (1960)	Market Price	Price divided by Earnings
Acindar	Laminated steel products, wire, strip, nails	\$0.59	\$4.95	8.4
Alpargatas	Textiles, cheap footwear	0.42	3.95	9.4
Celulosa	Celulose, paper, chemicals	0.46	4.15	9.0
Kaiser	Automobiles, trucks	0.51	2.80	5.5
Papelera Argentina	Paper and packaging	0.42	3.60	8.6
SIAM Di Tella	Machinery, electrical home appliances	0.66	6.90	10.4

equivalent of between \$2.25 and \$2.50 per share, with earnings this year expected to exceed the equivalent of 45¢ per share. Buxton Ltda. (a holding company with manufacturing subsidiaries held jointly with Johnson Wax, Yale & Towne, the British group of Hawker-Siddeley, and the German piston manufacturer Mahle) sells at the equivalent of \$1.75 per share, and is earning almost one-third of that. One of the major cement companies, Loma Negra, recently announced that it is withdrawing its shares from listing on the stock exchange; its market price dropped below \$8.00, which is less than two times earnings.

One other factor remains to be mentioned—taxes. In Argentina there is a tax on corporate earnings of 33%, and an excess profits tax which can bring corporate income tax up to a total of 50%. Shares can be either registered or bearer (anonymous). If registered, the shareholder receives the full amount of any dividend paid, and he declares it in his annual income tax statement, paying whatever his personal tax bracket dictates (after computing the 33% corporate income tax as a payment on account—in other words, there is no double taxation on both corporate and individual income in Argentina).

Holding companies pay no income tax on dividends. If a share is in bearer form or anonymous, a flat 8% is withheld by the paying agent, and the remainder is free of all other taxes. The 8% applies to both cash and stock dividends, the latter based on the par value of the share. (Par value for Argentine shares is almost universally 100 pesos, or the equivalent of about \$1.20 per share). Capital gains tax is not applicable to share transactions. However, when trading activity is "habitual" (generally held to consist of more than five in-and-out operations per year), profits and losses are computable for income tax. This particular tax regulation

has proven to be so unenforceable, however, that in effect there is no income tax on capital gains in Argentina.

To summarize: Argentina has the best developed and most promising economy and the most active stock market in Latin America. Its currency has been stabilized and should remain stable in the future. A severe austerity program and a highly successful oil program promise to bring prosperity back to Argentina within a few years. The present administration has weathered the worst storms and is now secure; it will remain in office until 1964. By then, it is hoped that prosperity will have permeated the economy sufficiently so that the voters will realize the effectiveness of the program and will support it, and so that some sort of continuity of the economic program can be expected.

BRAZIL

Brazil is the biggest country in Latin America both in terms of area (3,300,000 sq. miles) and population (66,000,000). It is famous for its vast natural resources, which include: most of the coffee in the world; one of the world's major crops of cocoa; one-third of the world's known iron ore reserves (although its share of the world market is only 1%); sugar; pinewood; cotton; about 75 million head of cattle (or almost double the cattle population of Argentina); and big deposits of manganese, tungsten, nickel and uranium.

Of exports amounting to nearly \$1.3 billion annually, over \$700 million, or about 60%, is accounted for by coffee. Almost another \$100 million is cocoa. No other single commodity accounts for as much as \$45 million (which would be 3½ % of total exports).

Brazil is very heavily dependent, therefore, on world coffee prices, and the outlook for coffee is not very promising. Prices have dropped from a high of over

Table IV — NEGOTIABLE BRAZILIAN SHARES

Name of Company	Business	Estimated Net Income per Share (1960)	Market Price	Price divided by Earnings
Cervejaria Brahma	Biggest beer manufacturer	\$0.50	\$ 3.50	7.0
Siderurgica Belgo Mineira	Integrated steel company (controlled by Belgian ARBED)	2.30	19.00	8.7
Siderurgica Mannesmann	Seamless steel tubing (controlled by German Mannesmann)	1.15	11.50	10.0
Moinho Santista	Flour milling, chemicals, textiles	2.00	11.00	5.5
Sao Paulo Alpargatas	Textiles, cheap footwear	0.40	2.20	5.5
Mesbla	Department store	0.45	1.80	3.0

90¢ a pound in 1954 to a present level of about 37¢; there is already a world surplus, and substantial new coffee production, not just in Brazil but in Colombia, Central America and Africa, threatens to depress prices further.

The Brazilian government is committed to purchase all locally produced coffee not sold on world markets. Whereas exports are running between 15 and 18 million bags per annum, production for the 1960-61 coffee year is estimated at anywhere between 27 and 41½ million bags. Cash for the purchase of this surplus coffee can come only from the printing presses.

Not only does Brazil have the problem of financing enormous coffee surpluses; it is committed to the financing of a gigantic president's toy, the new capital of Brasilia. The ultimate cost of building Brasilia will run

in excess of \$2 billion. The annual cost of running it, in an area far from the major producing zones of Brazil, will be staggering.

Although supporters of Brasilia insist that it is opening up a vast and rich unexplored part of Brazil, others question the richness of the area. The soil around Brasilia is mostly a red clay, unsuitable for cultivation of the major non-perishable crops. The major mineral deposits are located elsewhere in Brazil. Perhaps over the very long run, this area will develop and justify the construction of a new capital there. But the administration's efforts to build Brasilia in such a short time, to the extent of shipping cement and other building materials by plane, is difficult to justify, and it is causing serious dislocations in an already overtaxed economy.

Nationalized Oil a Handicap

Brazil's nationalistic oil policies have been another handicap to its economy. Through its oil entity, "Petrobras," the government has spent enormous amounts of money and has only succeeded in bringing in a small amount of additional production in an already proven area. It could have saved these expenditures if it had permitted foreign companies to explore for oil at their own expense; besides it is possible that new fields might have been discovered. Imports of crude oil, combustibles and lubricants amount to almost \$400 million per annum, or about 30% of the country's total import bill, so the importance of increasing local production—if indeed there is any substantial amount of oil in Brazil—can be readily appreciated.

It is hard to see how the cruzeiro, which has held steady at about 187 to the dollar for the better part of a year, can do anything but deteriorate rapidly during the next several years, until some effort is made to balance the budget and restore some fiscal responsibility to the nation. A lot hinges on the next elections. The current apparent favorite (by a very small margin), Janio Quadros, has the reputation of soundness and honesty, whereas his opponent, General Lott, would probably continue present policies if elected.

On the positive side of the picture, more new industry has been installed in Brazil during the last decade than in any other country in Latin America. An automotive industry with capacity presently exceeding 100,000 units annually, has sprung up in just six years, and similar vast strides have been taken in other industries. This is due principally to the size of Brazil's market; out of 66 million total population there is an estimated "economic population" of 46 million who are actual producers and consumers. Gross National Product is approximately \$15 billion (the failure of this figure to grow, as indicated in *Table I*, in spite of rapid industrialization, is due principally to the sharp decrease in value of the country's principal commodity, coffee).

In contrast to Argentina, Brazil has very little stock-market activity. The operations of the stock exchange are quite primitive; very little accurate financial information is available; and volume is small. Daily activity on the Rio de Janeiro stock exchange averages probably



Development of the world's newest capital, Brasilia, may well be the most costly in modern times, and certainly has more tongues wagging since Pierre L'Enfant's design for Washington, D. C. Both capitals were "planned that way." Brasilia is located 600 miles north of Rio de Janeiro in a vast trackless plain of red dust. Still, history may prove its location and design a stroke of genius. But, Author Boyd currently sees it as "causing serious dislocation" in an already overtaxed economy. Above two 25-story buildings, in Brasilia, house offices of Brazil's 389 Congressmen.

\$75,000; in São Paulo \$50,000; and throughout the rest of the country not more than \$25,000 to \$30,000. Total activity is therefore about \$150,000 per day. The shares shown in *Table IV* are the only ones in which any degree at all of negotiability exists (averaging between 400 and 2,500 shares per day traded).

The corporation tax in Brazil is 23%; the tax on dividends, if registered and held by a holding company, is zero. If registered and held by an individual, no tax is withheld at the source, but the owner of the shares must pay his regular income tax on the dividends. If the shares are in bearer (anonymous) form, 28% of the dividend is withheld at the source, and the remainder is tax-free. There is no capital gains tax to individuals, but there is to corporations (this gives rise to much switching back and forth of shares between individuals and privately owned holding companies at dividend time, with the dividend going tax-free to the company and the capital gain between cum- and ex-dividend price going to the individual).

In summary, the prospects for a stock market investor in Brazil do not appear very promising at present. Limited volume and information are discouraging on the one hand, while the probability of a further serious depreciation of the currency increases the risks of loss on the other.

CHILE

Chile is typical of the majority of Latin American countries in that its economy depends heavily on one commodity, in this case copper. Of an export trade amounting to approximately \$400 million annually, copper accounts for over half; next in importance come nitrates, iron ore, and iodine. Eighty-two percent of exports are minerals; the remainder consist of wool, wine, agricultural products, paper and pulp, and steel.

In the future, copper is going to become even more important. Investments totalling around \$400 million are being contemplated by Anaconda and Kennecott, and Cerro de Pasco may contribute another \$100 million, all to develop what appear to be some of the richest copper deposits in the world. There will also be substantial growth in pulp and paper exports. In this field Chile hopes to become a dominant supplier for all of South America. Exports of other commodities may be expected to show normal secular growth except for nitrates, which are declining in popularity as synthetic chemical fertilizers are becoming more abundant and less expensive throughout the world.

Whereas, externally, the trade picture for Chile looks very promising (always subject to fluctuations in the copper market), internally there are some serious problems to be solved. For almost a decade and a half, since the end of the war, strongly pro-labor governments dominated the political scene, and their policies proved very costly and inflationary. A series of artificial measures to keep the exchange rate stable, and prices down, failed miserably, and a runaway inflation was aggravated by a very expensive social security program (out of every 100 pesos of wages, the worker contributes 15

pesos to the pension fund and the company contributes an additional 45 to 53 pesos), and annual across-the-board wage increases averaging about 30%.

Finally the public could stand no more, and in the 1958 elections arch-conservative Alessandri was swept into the presidency and invested with almost dictatorial powers. He has followed the orthodox austerity measures, reducing consumption by holding back on wage concessions and tightening up on credit; diminishing the deficit by cutting back government employment and increasing taxes; and at the same time encouraging production by leaving prices free to seek their own levels.

Thus, after two years, although the cost of labor and the cost of living are still high, by Latin American standards, President Alessandri has succeeded in restoring a certain amount of stability to the economy. Just as the program was making noticeable headway, however, a series of devastating earthquakes occurred in the southern part of Chile. Destruction to railroads, highways and ports was so severe that southern Chile has been virtually cut off from northern Chile. An estimated \$300 to \$500 million of damage was done to private property, besides which there is the continuing spectre of tremendous loss of income to the country (by way of comparison, \$500 million represents to Chile, with a Gross National Product of just under \$3 billion, what \$85 billion would be to the United States, with its GNP of \$500 billion).

Emergency Taxes Hiked

Consequently, there are a series of emergency measures about to be taken, principally in the form of taxes, which on top of the austerity recovery program will be extremely burdensome to the economy. Corporation income tax of 25% will go up to 29½%, and a 20% emergency surtax on all taxes will bring this up to 35.4%. Branches of foreign companies (not incorporated locally in Chile) pay an additional 25%, which may also be increased to 35.4%. Besides these income taxes, corporations pay another 5% of their net income as a "real estate" tax. There is a withholding tax on dividends of 18%; the 20% emergency surtax will bring this up to 21.6%. In Chile, shares are in registered form, so that the individual must pay additional tax on his dividend income if he is above the 21.6% tax bracket, which the majority of shareholders are. Indeed, the only bright spot in the Chilean tax picture is that there is no tax on capital gains.

For the size of the country, Chile has a surprisingly active stock exchange. In normal times transactions average between \$150,000 and \$250,000 per day on the Santiago "Bolsa," compared with about \$150,000 total for all the exchanges in Brazil, a country with nine times the population and over five times the Gross National Product of Chile. At present, however, times are not normal in Chile. Besides tight credit, severe taxes and violent earthquakes, a large number of brokers were recently caught short using customers' call money in shaky credit operations and other speculations. Many brokerage firms are now bankrupt; some brokers have

Table V—CHILE'S ACTIVELY TRADED SHARES

Name of Company	Business	Estimated Net Income per Share (1960)	Market Price	Price divided by Earnings
Papeles y Cartones	Fully integrated paper company	\$0.74	\$ 5.90	8.0
Banco de Chile	Commercial bank	2.75	30.00	10.9
Tierra del Fuego	Sheep farming	0.57	6.85	12.0
Sudamericana de Vapores	Shipping	0.93	5.85	6.3
Copec	Distribution of petroleum products	0.87	2.80	3.2
Cemento Melon	Cement	0.60	8.29	13.6

fled the country; and, in general, confidence in stock exchange operations is at a low point—so trading volume has diminished to about \$100,000 per day.

Table V presents a handful of the most actively traded shares in Chile and their present market prices.

It would be difficult for an outsider to operate in the Chilean stock market from a distance. In spite of a fairly active market, which assures a certain degree of liquidity, there is little official information on which to base one's judgments, except annual reports which are published up to four months after the year end, and which require exhaustive analysis to disclose the true, as compared with the stated, figures on net income, reserves, et cetera. Furthermore, Chile is a land of monopolies—the paper monopoly, the beer monopoly, the shipping monopoly—which are subject to unforeseeable changes of policy from within or possibly without (the government). Lacking access to inside information from the companies themselves, and from government policy-makers, this market would not be a reliable medium for short- or even medium-term investors. For long-term operations, however, there are a number of well managed companies whose shares will probably do well. In the past five hectic years a good many of them have managed to outperform the devaluation of the peso, both in terms of free-market dollar quotations and cost of living.

MEXICO

Like Argentina, Mexico is an exception to the general Latin American pattern of one- or two-commodity economies. Of its dollar revenues, which run around \$1 billion annually, the major item is tourism, accounting for over \$350 million (net after deducting Mexican tourist expenditures in the U. S.). Next come cotton and coffee exports, amounting to \$200 and \$70 million respectively. Another \$240 million is accounted for by

exports of eight widely diversified products, ranging in volume between \$20 million and \$40 million each; these include minerals (copper, lead, zinc, sulphur, and petroleum products), agricultural products (beef and cattle, tomatoes) and shrimp. Because of the Cuban fiasco, Mexico will now receive an unexpected windfall in the form of an increased sugar quota to the U. S., which should increase revenues from this source from \$15 million to over \$50 million. The remainder of Mexico's export revenues comes from a broad variety of products ranging from honey to thread.

Of the seven Latin American countries discussed in this article, Mexico has enjoyed the greatest stability with regard to currency fluctuations (see *Table II*). The exchange rate has been supported by the Banco de Mexico at a steady 8.01¢ since 1954. The rise in the cost of living index in Mexico has been less than that in any of the other six countries. Mexico has enjoyed uninterrupted political stability for 40 years, something unique in Latin America.

The soundness of this situation has not gone unnoticed. Mexico shares top honors with Brazil in post-war foreign investment; total foreign investment exceeds \$1.3 billion and is rising fast. Industrial production has risen at the rate of 5½% per year since 1945. In fact, after 15 years of rapid industrial development, Mexico can no longer be considered an undeveloped country. Furthermore, the boom which it has been undergoing shows no signs of abating, nor can it if the economy is to stay ahead of population growth. The 32 million population of 1960 is expected to reach 36 million by 1965, 42 million by 1970, and 53 million by 1980, besides which the living standards of the large majority of these people must be vastly improved to approach what we consider a reasonable level.

There are any number of excellent investment opportunities in Mexico, and stocks and bonds are no excep-

Table VI—ACTIVE MEXICAN SHARES

Name of Company	Business	Approximate Present Market Value of Shares	Est. 1960 Earnings	Number of Shares Traded (12 Months)	Total Dollar Value of Trades (12 Months)
Telefonos de Mexico	Telephone company	\$ 7.20	N.A.	500,000	\$3,500,000
Altos Hornos de Mexico	Integrated steel products	11.70	2.40	150,000	2,200,000
Fundidora de Monterrey	Steel	12.60	2.50	100,000	1,350,000
Celanese Mexicana	Synthetics & plastics	11.50	N.A.	100,000	1,260,000
Cerveceria Moctezuma	Beer	12.00	2.00	85,000	1,000,000

tion. However, trading in common shares on the stock market is extremely limited, with volume at times rising perhaps as high as \$100,000 in one day, but averaging only somewhere between \$40,000 and \$60,000. With this sort of market, purchases and sales of more than a few hundred shares move the market, and an investor must be patient and cautious in either acquiring or disposing of shares. A list of the five most active shares in which some trading activity can be expected almost daily is presented in *Table VI*.

The tax picture in Mexico would be complicated to explain, so this article will limit itself to the observation that for corporations income tax treatment is somewhat less punitive than in the U. S. There is a 15% withholding tax on dividends. Shares are in bearer form, and there is no capital gains tax since administrative control over share transactions would be practically impossible.

For a much more comprehensive picture of the business and tax situation in Mexico, the author would like to recommend the book *How to Live and Invest in Mexico* by Daniel James, published by Carl D. Ross, Reforma 336, Mexico 6, D.F.

PARAGUAY, PERU AND URUGUAY

Since the remaining three countries have extremely little stock market activity, this article is going to touch on them only very briefly.

Paraguay is the only remaining dictatorship in South America. Of all the seven countries mentioned in this article, it is the least developed. Its economy is almost entirely agricultural, its principal crops being cotton, sugar, mandioca, rice and tobacco; and its principal industries being a natural outgrowth thereof: textiles, quebracho extract, forest goods, oils, wines, milling and tobacco products. Two or three years ago there was a flurry of excitement in Paraguay as several U. S. oil companies drilled in what appeared to be some very promising formations, but nothing of commercial value was discovered and the search for oil has been abandoned. There are undoubtedly many excellent real estate investment opportunities in Paraguay (the land is rich and abundant), but the big profits from real estate operations come from development projects of one sort or another, which would require adequate supervision, and finding competent and reliable personnel is a major problem in a backward country such as this.

Peru has a small but nicely diversified economy. Exports run around \$450 million annually, consisting principally of long-staple cotton, non-ferrous metals, sugar, fish meal and guano. It is self-sufficient in oil production, with a small exportable surplus. A fresh stimulus will be injected into the economy when American Smelting and Cerro de Pasco bring a vast new \$200 million copper mine into production.

The present Peruvian government is conservative, patrician and secure; the budget is balanced; the currency has become stable; and credit is not particularly tight—at least in comparison with such countries as

Argentina, Brazil and Chile. Of a population of 10½ million, only 3½ to 4 million are producers and consumers. The remaining 6½ million are principally Indians living in the mountains; and these Indians are so completely out of the economic picture that during the course of a year it is unlikely that more than a handful of them will have enough money to buy one Coca-Cola. The best investment opportunities in Peru would appear to be in land development, or in small local industries, bearing in mind that these operations could only be undertaken on a long-term basis.

Uruguay has been known as the "Switzerland of South America," and from a banker's point of view this is quite true. With no corporation income tax, anonymity of share ownership, and few restrictions on the activities of foreign holding companies, it is an ideal financial headquarters for operations of international investors. Here, however, the similarity with Switzerland ends. Uruguay is primarily an agricultural country. Of exports approaching \$100 million, \$35 million is wool; \$29 million is meat, meat by-products, skins, hides and hair; and \$11 million, other agricultural products. These add up to \$75 million, or 75% of total exports. Practically all of the remainder of exports consists of spun and woven products. There is a little light industry in the country, but the size of the market is not sufficient to attract industry on a large scale.

Uruguay has been under successive socialistic governments for half a century; the present administration is an exception, but it will probably not be able to alter the internal situation very much during its tenure. The principal problem is that of a total labor force of about 1,150,000, some 600,000, or 52%, work for one agency or another of the government. The tendency of such a bureaucracy is, of course, not only *not* to be productive, but to detract from the productivity of the remaining 48% by creating red tape.

In spite of this situation, Uruguay's present conservative administration (the first conservative government in 50 years) has taken effective measures to eliminate a serious foreign trade deficit and has made overtures towards reducing government employment and balancing the internal budget. Prospects for a growing prosperity are quite good, as Uruguay is something of an economic satellite of Argentina, and *the latter country is at the beginning of a major boom*. As regards investment opportunities in Uruguay, these would appear to be limited mainly to real estate and certain light industries, with the understanding that the investor is likely to be locked into his investment indefinitely.

CONCLUSION

Latin America has spent the past dozen years going through a clumsy and painful economic adolescence. Its leading countries are now emerging from this stage, and the worrisome symptoms of instability, brashness, sensitivity, and self-consciousness are giving way to a growing sense of confidence and responsibility. Governments, by and large, are becoming more conservative

and are welcoming foreign capital rather than attempting to drive it out. Economic and fiscal policies are now aimed towards encouraging the creation of new wealth rather than towards the redistribution of existing wealth. A new era of political stability, international cooperation, removal of trade barriers and tremendous economic growth is just beginning.

Cuba an Exception

Cuba, of course, is an exception to everything that has been said, but its government is going through the successive stages of dictatorship so rapidly and violently, that the final degenerative cycle is probably not far off. When large scale corruption sets in and the church becomes a scapegoat, a dictatorship is already on its last legs, and its downfall is only a matter of time.

The general investment climate in Latin America, therefore, is excellent. Practically any type of investor—industrialist, farmer, merchant, real estate developer, cattle breeder, and even the most exacting of all, the securities trader—will find numerous and rewarding opportunities in Latin America. With political and currency risks now very much reduced, and in some cases virtually eliminated, the high returns and enormous growth potential of investments in Latin America become extremely attractive.

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Phoenix Analysts 25th NFFAS Member

The Phoenix Society of Financial Analysts has become the 25th member of *The National Federation of Financial Analysts Societies*, according to an announcement by George M. Hansen, executive secretary-treasurer of The National Federation.

Theo. A. Rehm is president; Charles E. James, vice president; John W. Stephens, secretary; and Robert C. Bohannan, Jr., is treasurer. The complete membership of 38 follows:

Hazen S. Arnold, Van Cleef, Jordan, Wood, Arnold & Miller; Broughton Avent, First National Bank of Arizona; Timothy A. Barrow, Bank of Douglas; Walter G. Becker, Arizona State University; William H. Benzel, Valley National Bank; Harry Blythe, Arizona State University; Robert C. Bohannan, Jr., National Life & Casualty Ins. Co.; John S. Bundy, First National Bank of Arizona; Hiram S. Davis, Western Business Consultants; Walter T. Dodds, Arizona Public Service Co.; Kirk C. Dunbar, Shearson-Hammil Co.; George F. German, Jr., Bank of Douglas...

Also: Arthur W. Goodearl, American Institute for Foreign Trade; Jay R. Green, General Electric Co.; Vincent S. Hart, Valley National Bank; Merle L. Hartley, investment counsel; Joshua A. Harvey, A. G. Edwards & Sons; Robert C. Headington, Arizona State University; John S. Jacobs, Arizona State Retirement Board; Charles E. James, Valley National Bank; Eugene S. Lee, Valley National Bank; John L. Liecty, Arizona Public Service; William E. Miller, Van Cleef, Jordan, Wood, Arnold & Miller; Duncan H. Newell, Jr., Valley National Bank.

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Financial Publication Index

Funk & Scott Publishing Co. recently inaugurated an index of articles appearing in financial publications, services, journals and the like. It's title: "Funk & Scott Index of Corporations & Industries."

Commenting on this service, the Business & Finance Division of the Special Libraries Association said:

"In surveying business librarians and Financial Analysts, it has been found that some of the larger libraries and investment firms have begun preparing their own indexes at considerable time and expense. To these people the 'Funk & Scott Index' should prove a boon; to others, it should be an inexpensive, time-saving means of providing quick information."

AN ACCOUNT of the growing significance of Financial Analysts, along with several photographs, was published in a recent issue of *Burroughs Clearing House*. Author is Ed Tyng, associate editor of The New York Journal of Commerce.



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Candid close-ups of good living in St. Louis

St. Louisans themselves picture what they like best

Who knows a community better than its people? Recently Union Electric sponsored an unusual photo contest. St. Louisans were asked to picture what they like best in the land they live in... and to send with each entry a caption explaining why the picture best represents St. Louis.

The response to this contest was overwhelming and revealing. Entries reflected St. Louisans' enjoyment of good living and their pride in St. Louis contrasts of tradition and bold action for progress. Here are three representative photos chosen from hundreds submitted:



Thelma Blumberg: "Creative art exhibition is wide open in opportunity to all... pictured here is the Westroads Art Show, one of St. Louis' many annual art exhibits."



Don Bush: "In a simple design—an octagonal balcony—one sees a link between the 100-year-old Campbell House and the new Plaza Apartments—a symbol of St. Louis' past and future greatness."



Jack Zehrt: "Pride in the St. Louis Hawks makes home games capacity turnouts as sports-minded St. Louisans share the fun of living in a world championship basketball team's home town."



St. Louis—and the 19,000 square miles around it which comprise the Strategic Center of America—has good living in abundance... natural wealth... excellent transportation... unlimited water... and plenty of electric power. In the past 10 years, Union Electric has spent some \$420 million to double the system capacity... has earmarked \$335 million for expansion during the next 5 years. If you are interested in further information about our area... plant sites... economic possibilities... living conditions, write us. Your inquiries will be held confidential. G. J. Haven, Manager, Industrial Development,

UNION ELECTRIC COMPANY

St. Louis 1, Missouri

Outlook for the Soft Drink Industry

by Herbert L. Barnet

IN 1959, THE PEOPLE OF THE UNITED STATES consumed a volume of soft drinks equal to almost 200 bottles per person. Presently, this rate of per-capita consumption is even higher, a pattern of growth which has characterized the soft-drink industry almost without interruption since its beginnings. Last year, carbonated beverage manufacturers sold 1,500,000,000 cases, each of 24 bottles, for \$1,500,000,000.

With allowable variances of high and low periods, despite wars, recessions, inflations and depressions, the industry has grown steadily and continuously for over 100 years—at a rate averaging out to about five percent each year. And all this may be said to have begun with man's search for pure water.

Prior to 1800, pure water was regarded as the only refreshing liquid. For centuries, the search for pure water—with no disease and death-carrying germs—was a constant quest, often determining the moving and settling of whole tribes and nations.

About 1800, artificially carbonated waters were advertised and sold in England. Though not conclusive, evidence indicates that the addition of flavors, such as fruit juices, ginger ale, or vanilla extracts, to artificially carbonated water, was an American innovation, first compounded and dispensed for immediate consumption—the beginning of the fountain drink.

Later, the successful bottling of waters of the famous Saratoga Springs in New York, previously available only at the Springs, led to experiments with the bottling of flavored drinks in the United States. The earliest available records show the appearance of carbonated beverage bottling establishments in the United States about 1835.

It did not take long for the industry to be officially noted by the U. S. Census. In 1850, 64 non-alcoholic beverage bottling organizations were reported. Aggregate production for the year was valued at \$760,000, and total capital at \$228,650. By 1875, 512 bottling plants were making products valued at \$4,740,000, a figure exceeded today by many individual plants.

In the Nineteenth Century touring medicine-man shows criss-crossed the nation, offering entertainment

Herbert L. Barnet, president and chief executive officer of the Pepsi-Cola Company, joined the company in 1949 as vice president in charge of national accounts. For a number of years prior to that time he had worked on legal business for Pepsi-Cola as a member of the law firm of Hays, Podell and Shulman, work which took him into many foreign countries. He became executive vice president and a member of the board of directors within two years, and became president of the company in 1955. A native of New York City, Mr. Barnet was graduated from Syracuse University and holds a LL.B. degree from New York University.

and selling cure-all concoctions that promised to cure almost everything; many of the present-day patent medicines got their start during this era.

In 1880, with no real market for any refreshment, except pure water, the soft drink industry got its initial foothold through the already established patent medicine field. Jamaica ginger, herbs and roots, the coca leaf, cola nut and citric acids—already in use in patent medicines—were blended with pure carbonated water and sugar, and sold oftentimes for both their refreshing and their therapeutic values.

Thus, a new industry was born, featuring cure-alls containing magic ingredients, advertised as "delicious." This was the prevailing atmosphere into which Pepsi-Cola made its entrance at the turn of the century in New Bern, North Carolina—and, of course, at the soda fountain. Many other drinks featuring the flavoring of extract of cola nut also came into being in this period of 50 to 75 years ago. For instance, Coca-Cola was first sold in Georgia in 1886.

Sociable and Refreshing

Now, the consumption of soft drinks has become to the world part and parcel of the American way of life. Consumer demand for cool, refreshing, non-alcoholic beverages long ago transformed the total soft drink image from snake-oil magic to light, sociable refreshment. It has created 12-months-a-year demand and world-wide acceptance for the one time American "summer drink." Sixty years ago the soft drink industry recorded a total volume of \$23 million, selling 38.7 million cases for an average consumption of 12.2 bottles in the United States.

Thus, through this 60-year period, soft drinks have grown into one of the most flourishing of the nation's industries, as attested by last year's *per capita* consumption of almost 16 times that of 1900.

In all, soft drinks are produced and sold today by some 100 franchise companies. A few, like Pepsi-Cola and Coca-Cola, are international in scope; some are national; and others only regional. There are close to 4,600 bottling plants in the United States, employing over 100,000 persons and producing an annual payroll of nearly \$400 million. The industry expends some \$150,000,000 annually for advertising and promotion, and represents a total investment of more than \$2 billion. It stimulates world economy by these annual purchases of materials essential to it: 1.5 million tons of refined sugar; 45 million tons of caramel; 10 million gross bottles; 220 million gross crowns; 24 million wooden delivery cases; and 848 million six-pack cardboard cartons.

Distribution begins with parent or franchise com-

SOFT DRINK PRODUCERS

	Market Price Aug. 1, 1960	Range—1960 High - Low	Earnings Per Share			Annual Div. Rate
			Half 1960	Half 1959	Earnings Year 1959	
Canada Dry	20	22 5/8 - 19	\$.59	\$.54	\$1.61	\$1.00
Coca-Cola	63 3/4	66 - 48 5/8	1.26	1.16	2.62	2.40
Hires (Chas. E.)	17 1/4	17 7/8 - 13	(1) .34	(1) .08	1.00	0.60
Pepsi-Cola	44 5/8	50 1/4 - 34 1/4	1.03	.97	2.17	1.40
Royal Crown Cola	17 1/8	21 7/8 - 17 1/4	.50	.84		
(1) Deficit						

panies, continues to franchised bottlers, then to distributors, then to outlets for retail sale to the ultimate consumer. Each contributes to the final purchase.

Parent or Franchise Companies

Companies such as Pepsi-Cola and Coca-Cola engage in the manufacture and sale of concentrate, or syrup, used to produce a specified beverage. In addition to production facilities, they own the trademark, the formula, and the good will attached to the product. The concentrate, or syrup, is sold to franchised bottlers throughout the United States and foreign countries, to whom appointments have been issued for the bottling of the carbonated beverage and its distribution within respective exclusive territories. Syrup for fountain, rather than bottle, use may also be sold directly to certain fountain outlets, such as national chain or multiple outlet operations, and for use in automatic beverage vending machines—or by some companies to distributors of fountain syrup.

It is the responsibility of the parent company to prepare programs to assist franchised bottlers in marketing the product and in servicing markets, expanding operations and improving production methods and facilities.

A major portion of the parent company's responsibility is to establish an advertising and promotional "umbrella" over all the brand-name advertising activities. It is this investment by the parent company in the tools of marketing—advertising and promotion—that provide the pace and theme of all brand-name marketing activities by bottlers.

Company programs and policies are effected and tailored to local conditions through decentralized administrative field organizations, consisting of divisional and regional officers, supervising district, field, and local personnel. Departments of the parent company also provide direct sales assistance to franchised bottlers by originating special merchandising, promotional, and public relations programs—and by aiding in training bottler sales forces.

Franchise companies maintain rigid control over the composition and quality of the beverage sold under the trademark. Pepsi-Cola Company, for example, maintains laboratories in New York, London, and other centers to conduct chemical, bacteriological and physical examinations of ingredients added to concentrate, of

syrup and carbonated beverages and of raw materials, bottles and crowns.

In addition, a number of mobile laboratories continuously visit franchised plants. Canada, also, has a main laboratory in Montreal and also a mobile laboratory unit. Traveling laboratories serve the plants in Mexico and Venezuela. Areas not accessible to mobile laboratories are covered by portable laboratory equipment. Traveling laboratory personnel maintain product control and survey plant equipment and production methods, as well as analyzing materials and products.

Franchise Bottlers

Exclusive appointments within respective territories for the manufacture, distribution and sale of the brand-name soft drink are granted by the parent or franchise company. The responsibilities of these bottlers to the parent company are to maintain rigidly the standards of quality and to advertise, promote, and market the finished product within the general business practices and broad outlines of general policy set down by the parent company.

The geographic and population size of these territories varies considerably; but these franchised bottlers are independent businessmen, usually important members of the local community, making a local investment and contributing to the local economy. Pepsi-Cola Company has divided the United States among 530 of these franchised bottlers. Some other companies grant larger or smaller territories, so that no two brand-names are sold by the same number of bottlers. The Coca-Cola Company, for example, has well over 1,000 bottlers covering the same geographic territory as the 530 Pepsi bottlers. By all odds the most numerous in

REGIONAL SOFT DRINKS

The soft drink industry has its regional likes; and among those which lack national fame are: B-1, 76, Bireley's, Kist, Birch beer, Buffalo Rock, Goody, Grapette, Vernors ginger ale, Sahara ginger ale, Cliquot Club ginger ale, Ma's Root Beer, Double Cola, Dr. Pepper, and Moxie. Then, of course, there's the legendary Sasparilla, which bubbled its way into a folk song.

this group is the plant under single family ownership and management in its local city, such as the Pepsi-Cola Bottling Company of Baltimore, Maryland, or the Coca-Cola Bottling Company of Sumter, South Carolina, or the Seven-Up Bottling Company of Charleston, West Virginia.

Occasionally some bottling operations will be publicly owned, its stock being traded on regional exchanges or over-the-counter. An example of this type is Pepsi-Cola General Bottlers, Inc. with headquarters in Chicago. This organization, listed on the Mid-west Stock Exchange, holds Pepsi-Cola franchises in Chicago, Des Moines, Louisville, and Kansas City.

While the bottling and sale of carbonated beverages is primarily in the hands of franchised bottlers, some bottling plants in and around various metropolitan and urban areas in the United States, as well as in number of foreign countries, are owned and operated by the franchised companies or their subsidiaries. Within the United States, Pepsi-Cola Metropolitan Bottling Company operates 22 plants in 18 cities, including among others New York, Detroit, Miami, Houston, Memphis, St. Louis, and Pittsburgh.

Bottling appointments are also held by organizations outside the United States and Canada. Again, the franchise holders are either independent businessmen or subsidiaries of the parent companies. At this writing, Pepsi-Cola is produced and sold in some 225 bottling franchises in 83 countries, aside from the United States and Canada. The principal soft drink markets apart from Canada and the United States include Mexico, the Republic of the Philippines, Venezuela and the Union of South Africa.

Distributors and Consumer Outlets

Franchised bottlers have the option of distributing through their own truck fleets and employed sales forces, or they can franchise distributors for individual segments of the general territories. In the latter case, distributors provide the vehicles and personnel, pick up product at the bottling plant, and sell to outlets dealing directly with the consumer.

In the United States, soft drinks are on sale in more than 1,500,000 retail outlets. In addition, they are sold at hotels, bars, restaurants, filling stations, armed forces post exchanges, sports arenas, bowling alleys, theatres and other places where Americans gather in leisure hours for relaxation, and through more than 1,000,000 automatic vending machine locations. Almost no urban American is ever more than a short stroll away from carbonated refreshment.

This is because the market for soft drinks—unlike that of almost every other product—is almost without limits of age, sex, income, geography, location, weather, or any other influence. The market is all people of whatever sort anywhere at any time of day or night. The only requisites to a sale are thirst, availability, and a small coin.

The future of this industry is bright indeed. All those

forces which can further its growth seem happily present in the 1960's:

1. Healthy economy; 2. population increases; 3. rising per capita consumption; 4. increasing leisure time; and 5. increasing foreign markets.

Early in 1960 Gross National Product reached the half-trillion-dollar mark. Sometime during the next 10 years it is expected to increase some \$250 million to the three-quarter of a trillion level, an all time high in the nation's economic history.

The nation's total working force is increasing constantly. Gainful employment figures are reaching new highs. High wage levels and more discretionary income favorably influence our growth. This means *more* soft drinks at home, at school, at work, and at play.

POPULATION EXPLOSION

Rising population is a key factor in chartered sales growth. The latest census shows an increase of 28 million persons over the 1950 figure. Over the next decade in the United States we can anticipate an increase of some 30,000,000 persons. Our population currently is growing at a rate of 240,000 per month. Translated in terms of markets, that is the equivalent of adding an Omaha, Nebraska, or a Providence, Rhode Island, to the total market each month. And soft drinks sell to all people.

By 1965, teen-agers, whose consumption of soft drinks is high, will have increased 19.1% against 9.8% for the general population. The 10-19-year-old market is expected to increase some 30% by 1965 over 1959.

Apart from their enormous consumption of soft drinks during their teens, these youngsters have been "educated" to soft drinks, so that as they become the older age groups, per capita consumption at the older age levels is likely to increase.

Thus, the changes in age composition of population during the next 20 years, as well as the added population, will benefit the soft drink industry. In other words, population will be growing more among higher-than-average per capita consuming groups than among lower per capita consuming age groups.

Another element in the overall population explosion that will provide an assist to the total soft drink market, is the trend toward early marriages and the establishment of additional family units. Today's 52 million family units in the United States are expected to be 58 million by 1967, and by 1970 an all-time peak of 67 million family units. With the rise in the establishment of family units come increases in the number of children, growth of suburbs, return to home entertainment and hobbies for the entire family as a group—all of which provide additional opportunity for increased soft drink consumption.

Though population growth is immensely important in the rise of soft drink sales, population increases assure an increased number of mouths but do not alone assure growth, only opportunity.

Additional opportunity lies in increased *per capita*

Soft Drink Distribution—1959

	Millions of Cases	Per Cent of Total
Supermarkets	163	11
Other food stores	740	50
Eating places	133	9
Drinking places	60	4
Confectionery & drug stores	118	8
Filling stations	90	6
Industrials	120	8
Other	60	4
	1,484	100

Source: Pepsi-Cola Co. Market Research Department.

consumption. Over the last decade United States' population increased 15%, but the sales growth registered by the soft-drink industry was 48%. Clearly, the industry's growth has been basically an increase in per capita.

It is interesting to review industry progress during the last three decades. In the 1930-1940 period, case sales went from 197.7 million cases, at a total value of \$172.5 million, to 550.4 million cases, with a value of \$411.6 million. Per capita consumption rose from 38.3 to 100.1 during a period that covered in part the worst economic depression this country has ever known. It is equally interesting to note that the major gains were registered during the 1935-1940 portion, where consumption, for example rose some 67 bottles per person.

The latter part of the 1930's was characterized by the initial appearances of mechanical coolers, automatic soft drink coin vendors, the introduction of the six-pack carton and the 12-ounce bottle, which Pepsi-Cola Company introduced.

In 1941, the year the nation went to war, the industry sold 740.4 thousand cases at a total value of \$553.8 million with a per capita consumption of 133.6. By 1950 the industry had reached the billion dollar sales mark, had sold 876.5 thousand cases, and had reached a record per capita of 158. The 1940's were a period when America spent close to six years under a strict war-time economy. It also marked increasing sales of six-pack cartons and further advances in the automatic vending machine field.

Since 1950 consumption has risen from the aforementioned 158 to 1959's nearly 200 bottles per person. During the same period, Pepsi-Cola's per capita has doubled; in fact, reported case sales has risen 182% in the face of a 48% industry increase. Industry statistics show that two cents of every food dollar is used for the purchase of soft drinks. With the total expenditure for food due to go up, as the population increases, and with the upgrading of food and beverage habits, there is every reason to anticipate that the percentage of the food dollar for soft drinks will rise during the next decade.

An indication of what can be accomplished through the upgrading of beverage habits is perhaps best illustrated by a member of our industry who has estimated

that if "we just sell each person in this country the idea of adding a carbonated soft drink to only one of his 21 weekly meals, then we would increase per capita consumption by approximately 25%.

FOREIGN PROSPECTS BRIGHT

American soft drinks have begun to find important markets overseas, and now franchised bottlers are found on five world continents. The American G.I., and the business or vacation traveler, started the demand for U. S. soft drinks, and natives are following suit. Slowly in some areas, and more rapidly in others—notably Africa—U. S. soft drinks are becoming an integral part of overseas' nations refreshment habits.

Consumption of soft drinks overseas has been growing faster proportionately than in domestic markets, which register an annual per capita increase of approximately five percent. The long term per capita growth trend overseas is an attractive part of the future picture.

Even with the present high level of overseas sales, there is still a great deal of foreign territory still untapped. In spite of the industry's rapid growth, future prospects are extremely bright in view of the fact that existing markets, where the product is now on sale overseas, represent less than 15% of the world's total markets.

The promise of this future is even more encouraging considering that each year entire nations are going to be introduced to a variety of American brand name soft drinks.

This is especially true in Africa, and areas south of the equator where seasons reverse those north of the line. This strong interest has helped to reduce seasonal variations in income. However, sales of bottled soft drinks are characterized by seasonal fluctuations. Peak periods occur in the summer months, and during the holiday season. As can be determined from the accompanying figures supplied by the American Bottlers of Carbonated Beverages Association, the monthly sales run thusly:

First Quarter		Second Quarter	
January	06.2%	April	07.9%
February	06.0	May	08.8
March	07.2	June	10.3
Total		27.0%	
Third Quarter		Fourth Quarter	
July	11.0%	October	07.8%
August	10.8	November	06.7
September	09.3	December	08.0
Total		22.5%	

From this, we see that soft drink sales quarters rank Third, Second, Fourth, and First. Yet, in general, in 1960, first quarter sales for the normally slow period broke all previous first period records, despite unfavorable weather conditions in much of the United States, and first half figures—issued in July—also broke previous industry standards. In a continuing attempt to smooth out seasonal fluctuations the industry is con-

NEWS FROM THE COLUMBIA GAS SYSTEM

Inter-Office Correspondence

IN THE TWELVE MONTHS ENDED JUNE 30, 1960, COLUMBIA GAS SYSTEM, INC., EARNED \$1.53 PER SHARE, COMPARED WITH \$1.37 IN THE PREVIOUS CORRESPONDING PERIOD. THERE WAS AN INCREASE OF 1,582,627 AVERAGE SHARES OUTSTANDING OVER THE SAME PERIOD LAST YEAR.

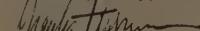
NET INCOME POSTED BY COLUMBIA GAS SYSTEM, INC., FOR THE 12 MONTHS ENDING JUNE 30, 1960, WAS \$44,414,535 — AN INCREASE OF 18.5% OVER THE PREVIOUS PERIOD.

TO \$502,066,000 FROM \$446,178,000 LAST YEAR — AND IN THE FIRST HALF OF 1960 AMOUNTED TO \$303,137,000, COMPARED TO \$266,141,000 IN THE JAN.—JUNE PERIOD OF 1959.

... and we

the progress of the

Yours very truly,



Hank Thomas
Vice President

CF/gw

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stantly reviewing, diversifying and sharpening marketing techniques.

Part of this revision of marketing techniques has been the veritable packaging revolution. Soft drinks are available today in a variety of packages to fit any market situation. Drinks are now available in bottles of various sizes, from the six and one-half ounce single drink unit to the hostess 26-ounce bottle. Included in this packaging revolution is the use of cans for soft drinks. Once used solely in overseas military installations, cans have made their appearance in retail outlets across the nation.

Once, the standard purchase was a single bottle. Then the six-pack cartons enormously increased the industry's volume. Now comes a trend toward sale of the 24-bottle case by service stations, supermarkets, and many other outlets where people with automobiles shop.

The automatic vending machine continues to offer tremendous potential for the industry. There are well over 1,000,000 automatic units already on locations today. Yet it is estimated that there is an immediate potential of over 500,000 vending locations presently without automatic machines. These locations are everywhere. They are in the mobile market, in personal service stops, and, in fact, in any place where people go in their daily activities.

Sales from this source alone in 1959 amounted to nearly 20% of total sales, or approximately \$633.2 million. Market research projections place the 1965 dollar figure at the \$800 million mark. Properly placed vending machines combine the best in point-of-purchase advertising and also create availability for on-premise cold bottle sales where people work, play, or shop.

Little wonder that every major parent soft drink company is in the midst of an accelerated program for its bottlers to garner their share of the 500,000 potential vending locations, as well as the 300,000 potential represented in replacement of obsolete machines.

Included in overall vending machine development, during 1960, was the appearance of a coin-operated

Indicative of the love of the soft-drink industry for the word "Cola" (in 16 oz. bottles), is the fact that the following are relatively new brands in the market: Big Giant Cola, Lotta Cola, 3-V Cola, "Mr." Cola, Triple Cola and—to give the word a new twist—Pop Kola.

unit to sell six-pack cartons for the home. Placed in housing projects, at roadside stands, and adjacent to retail establishments when they are closed, these vending units represent still another outlet potential.

Two additional areas—filling stations and supermarkets—represent great growth potential for the industry. The former is being pushed vigorously with vending machines and case lot incentives; the latter's sales pace is accelerated by frequent consumer trade promotions.

While cola drinks account for over 60% of the total soft drink market, there has been considerable activity in developing new beverage flavor brands on a regional as well as national basis. Organizations which formerly had been content to turn out just one drink today are producing lemon-lime as well as root beer, ginger ale and various fruit drinks, and gaining additional customers in the process. With no anticipated letup in the public's thirst in the future, results from the industry will continue to be substantial during the 1960's with profits and dividends satisfying.

The public's acceptance of higher prices, coupled with increased volume, offset rising costs of materials, production and distribution, thus bringing in additional profits. To help achieve the higher volume goal, major companies are budgeting the greatest advertising-promotional outlays in industry history. Since the industry is basically one of advertising, promotion and marketing, these outlays represent important industry expenditures. Higher volumes also mean further increased advertising-promotional investments. And, increased volume will provide bottlers with even more funds for accelerated advertising, promotion, and other tools of marketing and of production for larger volumes.

In summation, a combination of positive factors points up excellent prospects for the future with every anticipation that the soft drink industry's persistent growth pattern will extend well into the future.

Long before the present decade ends, the industry should be able to sell a record 1.85 billion cases at a retail volume of \$2.46 billion, based on the present pricing structure. Per capita consumption should be close to 240 bottles per person.

These figures would represent an 85% increase over 1950's 1 billion cases; a 52% increase in per capita consumption over 1950's 158 bottles; and 123% rise over 1950's \$1.14 billion dollar sales volume.

Finally, one more statistic: In the time that it has taken you to read this article, hundreds of thousands of people all around the world have enjoyed a soft drink.

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290th Quarterly
Dividend
37½¢ a Share

Payable:
Oct. 1, 1960

Record date:
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Declared:
July 28, 1960

Elmer F. Franz
Vice President & Treasurer

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September 1, 1960,
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658,008,000th mile
of space flight.*

A Decade of Electronics Activity

by Harry Greenfield

ON THE ASSUMPTION that what will take place during the sixties depends, in part at least, on what happened during the fifties, let us cast an economist's eye view over developments in the electronics industry from 1950 through 1959. This backward glance should help not only to point up the salient features of electronics industrial activity, but also to quantify what otherwise tend to be qualitative notions about these developments.

First, some notes on where the data were obtained and what restrictions should be placed on them:

(1) The two primary sources of data are the Electronics Division of the Business and Defense Services Administration of the U. S. Department of Commerce; and the Marketing Data Department of the Electronic Industries Association. There is some variability in these sources, due to differences in industry definition. I have used the series from both sources, which appear to indicate a high degree of internal consistency.

(2) The data are in current dollars and have not been adjusted for price changes. Since all of the series used have the same bias, relative comparisons will not be too far off. (Analysis in real terms will have to await a more appropriate and standardized industry classification as well as the publication of overall and subgroup price indexes).

(3) The data employed here cover factory sales only. This means that electronic industry services such as distribution, research and development, broadcasting revenues, computer service bureau revenues, etc. are not included. In effect, the data apply to about one half the industry.¹ Nevertheless, many of the trends which are evident from this analysis of the physical output of the industry, are carried over to the services portion of the output as well.

Chart I shows the absolute and relative rates of growth of Gross National Product and electronics output. The ratio scale permits a quick visual comparison of the relative growth rates. It can be seen that the slope of electronics output is significantly steeper than the slope of GNP, indicating the rate of growth of electronics output (as represented by factory sales) exceeded the rate of growth of the economy as a whole.

1. See the present writer's suggestion for an alternate classification basis in the January 1960 issue of *Western Electronic News*.

Dr. Harry Greenfield is director of research of Electronics Investment Management Corp. (San Diego, Calif.), investment advisors to Electronics Investment Corp., a mutual fund, and to Electronics Capital Corp., the nation's largest federally licensed small business investment company. Dr. Greenfield holds a B.S.S. from the City College of New York, and a M.A. and Ph.D. from Columbia University.

For those who trust statistical methods more than they do their eyesight, two normal equations² were computed from the data by least squares and the trend (broken) lines calculated from these. The average annual rate of growth, computed from the equations, turned out to be about 5.3% for GNP and approximately 14% for electronics output. For this 10-year period, therefore, electronics output increased at an average annual rate some two and one half times faster than the economy as a whole. (It should be noted that GNP includes goods and services whereas the electronics series represents goods only).

2. The semi-log straight line equations are:

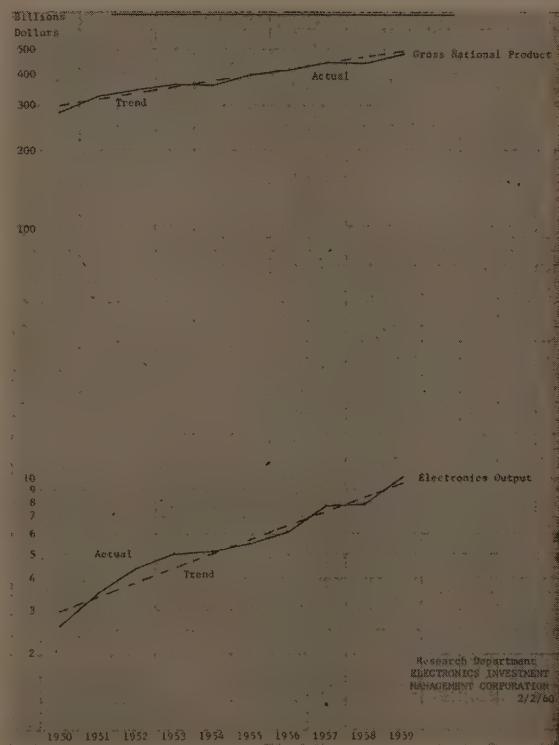
$$(1) \log \bar{Y}_x = 2.4826 + .0223 X$$

where \bar{Y}_x = GNP and $X = 0$ at 1950

$$(2) \log \bar{Y}_x = .4754 + .0563 X$$

where \bar{Y}_x = Electronics output and $X = 0$ at 1950

Chart I
Gross National Product and Electronics Output, 1950-59



Source: U. S. Dept. of Commerce, Electronic Industries Assn., Electronics Investment Management Corp.

Table I
Factory Sales of Electronic Products, 1950-59

Year	GNP in Billions of Current Dollars	% Change from Preceding Year	Electronics Output (millions)	% Change from Preceding Year	Consumer Products (millions)	% Change from Preceding Year	Replacement Parts, Tubes, and Semiconduct. (millions)	% Change from Preceding Year	Industrial Products (millions)	% Change from Preceding Year	Military Products (millions)	% Change from Preceding Year
1950	284.6		2,600		1,500		250		350		500	
1951	329.0	+15.6	3,500	+34.6	1,400	-6.6	350	+40.0	450	+28.6	1,300	+160.0
1952	347.0	+5.5	4,400	+25.7	1,300	-7.1	400	+14.3	500	+11.1	2,200	+69.2
1953	365.4	+5.3	5,000	+13.6	1,400	+7.7	500	+25.0	600	+20.1	2,500	+13.6
1954	363.1	-.06	5,100	+2.0	1,400	0	650	+30.0	650	+8.3	2,400	-4.0
1955	397.5	+9.5	5,500	+7.8	1,500	+7.1	750	+15.3	750	+15.4	2,500	+4.2
1956	419.2	+5.5	6,100	+10.9	1,600	+6.6	850	+13.3	950	+26.6	2,700	+8.0
1957	442.5	+5.6	7,800	+27.9	1,700	+6.3	900	+5.9	1,300	+36.8	3,900	+44.4
1958	441.7	-.02	7,940	+1.8	1,600	-5.9	860	-4.4	1,380	+6.1	4,100	+5.1
1959	480.0	+8.7	10,131	+27.6	1,585	-1.0	963	+11.9	1,648	+19.4	5,935	+44.7

Source: Electronic Industries Association, "Fact Book, 1959," Electronics Magazine, Jan. 1, 1960.

These average annual growth rates were derived from a computed straight line trend which, by definition, tends to smooth out the irregularities which actually occurred. The actual year-to-year changes in GNP, electronics factory sales, and in the major industry subgroups, are shown in *Table I*.

This table brings out some important points. For example, it is interesting to note that whereas GNP actually declined during the recessions of 1953-54 and 1957-58, no declines were recorded for electronics output as a whole. There were declines in the subgroups, however, over the 10-year span, the greatest number of which occurred in the consumer products group. The military products segment showed the largest percentage increases.

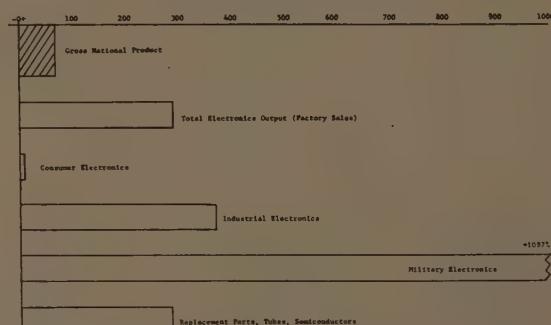
We may also note that 1959 was the first year in which factory sales to the industrial segment exceeded sales to the consumer segment.

The general importance of this table lies precisely in the variability it shows. This should serve to deter oversimplifications in the forecasting of electronics sales. For example, a 15% increase in GNP from 1950 to 1951 was associated with a 35% increase in total electronics output; a 40% increase in the replacement market; a 29% increase in industrial products; a 160% increase in products for the military (Korea); and a 6.6% contraction in consumer products. It is obvious that a thorough knowledge of the economic and technical factors underlying the specific subgroups is indispensable for accurate projections of the electronics market.

Taking the terminal years from *Table I* (i.e. 1950 and 1959), and computing the percent change over the entire 10-year period, produces the picture in *Chart II*.

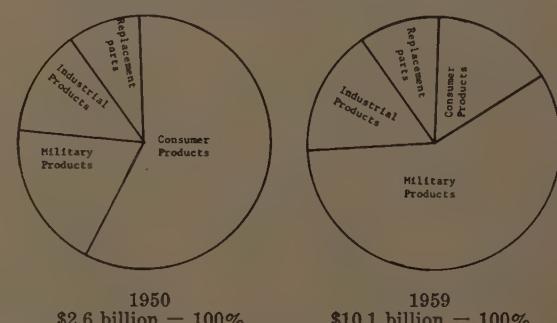
We may note here that, with the exception of consumer products, each of the other groups exceeded the growth in GNP over the past decade. The extremely

Chart II
Percent Change 1950-1959 in Gross National Product and Major Electronic Segments



Source: Electronic Industries Association,
Electronics Investment Management Corp.

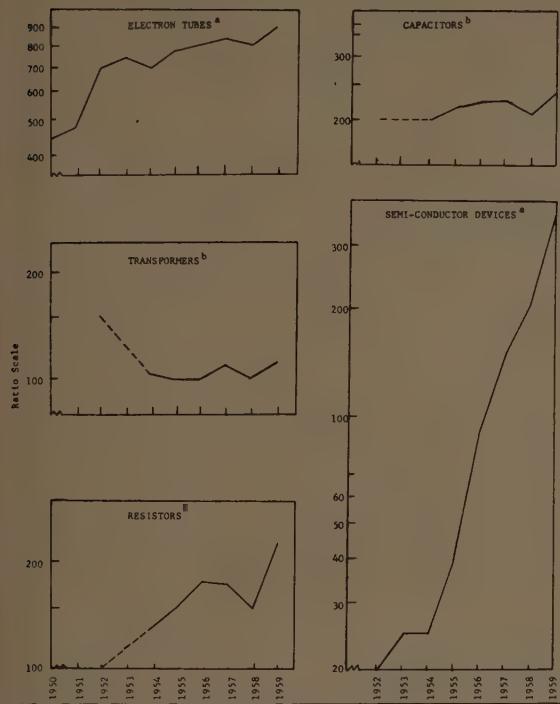
Chart III
Product Mix of Electronics Output, 1950 and 1959



Source: Electronic Industries Association,
Electronics Investment Management Corp.

Chart IV

Factory Sales of Major Electronic Components, 1950-59
(In Millions of Dollars)



Source: (a) U. S. Dept. of Commerce
(b) Electronic Industries Assn.

rapid growth in the military products segment over these years is particularly noticeable in this chart.

Again, from *Table I*, we may calculate the change in the "product mix" of electronics factory sales from 1950 to 1959. This is shown in *Chart III*.

It is apparent that there has been a major shift in the composition of electronics factory sales over the last decade. In 1950, consumer products (radio, T.V., etc.) dominated the picture. By 1959 the military market became the single largest segment. Consumer products decreased dramatically; industrial products gained; and the replacement market remained roughly constant.

Let us turn next to the major components of electronics output—the raw material from which the more complex products and sub-assemblies are fabricated. The 10-year sales record of these components is shown in *Chart IV*.

Again, the semi-log paper enables us to compare both the absolute and relative rates of change. The dramatic growth of semi-conductor devices (diodes, transistors, rectifiers) is readily observed. The absolute increase from about \$20 million of sales in 1952, to about \$370 million in 1959 (an increase of 1,750%), concurrently with a drop in unit prices over this period, is nothing short of spectacular.

This mushrooming of semi-conductor sales affected some of the other components on the chart as well. Electron tube sales, for instance, show a pattern of increases at a decreasing rate, with the diminishing growth rate setting in at about 1952. Nevertheless, there was roughly a 99% increase in sales over the period. The continued increase in sales of semi-conductor devices will undoubtedly cause the tube graph to flatten out and eventually to decline. The speed with which this will occur depends on advances in semi-conductor research and technology. At the moment, there are high power, extreme temperature range tube applications for which semi-conductors are not yet substitutable. In addition, the tube replacement market will maintain considerable strength for some time.

Transformer sales decreased during the period under review—the only component for which this is true. From 1952 to 1959, the decrease was on the order of 25%. The transformer decline appears to have been due to advances in tube technology which eliminated the need for transformers in many types of circuits. In more recent years, the increased use of transistors may have restored transformers to their earlier importance.

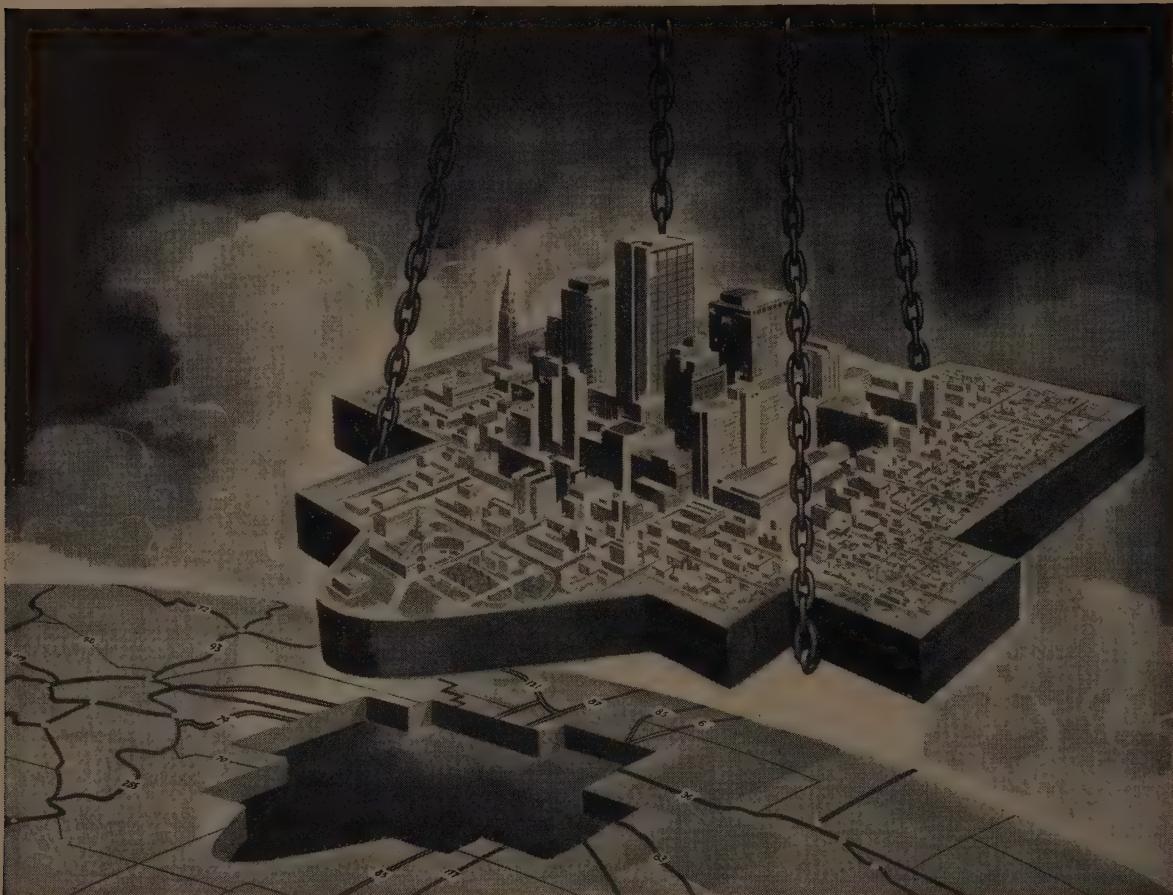
Sales of resistors show a strong upward trend with a 124% increase over the period 1952-1959. This is due, in part, to overall electronic output growth as well as to the need for more specialized types of resistors in modern complex circuitry.

Capacitor sales showed no marked change over the period, the increase from 1952 to 1959 being on the order of 20%. A decrease in unit prices, however, obscured an increase in physical units produced. The use of specialized (mainly tantalum) capacitors may cause this component to continue the 1958-1959 upward trend.

SUMMARY

We have attempted to present a picture of some of the important trends in electronics factory sales as a whole, and in the major subgroups and components, over the past decade. A comparison with general economic growth as measured by GNP, was also submitted. However, no attempt was made to define the "stage of growth" of the industry, or to extrapolate the past decade's growth rate. In an industry such as electronics, where innovation is basic, rapid and continuous, such projections are subject to wide margins of error. Suffice to say, this industry has demonstrated remarkable growth from its early consumer radio-dominated beginnings in the 20's and 30's to a huge industrial complex which ranks with the largest industries in our economy, namely, chemical, automotive, metals and petroleum. Using the industrial classification I have suggested (footnote 1), my estimate of the total output of electronics goods and services, for 1960, is \$23.9 billion.

We hope that some of the facts and trends presented here will serve as a sound basis from which discussions of the future growth of the industry may benefit.



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West German Stock Investment

Many Workers Now Stock Owners for First Time

by Adolph E. Grunewald

ON ALL STOCK EXCHANGES OF THE WORLD, the market barometers throughout 1959 stood at "fair weather." The price advances on the West German stock exchanges were particularly strong. It was the best market year of the post World War II period, even though 1958 had already seen a substantial rise.

The German stock index¹ rose during 1958 from approximately 200 to 300, or an average market price increase of about 50%. During the early months of 1959 there was a sharp sell-off as a result of the nervousness which grew out of the Soviet Berlin-Note. But, as the political clouds cleared, the market recovered. By May, the index stood at 350. At the end of November it stood at 484, and by December 31, at 516.

The situation in Germany today bears little resemblance to the conditions which existed after the close of World War II. It is not surprising that at that time there reigned upon the economic sector a terrible confusion. What remained of the German economy, that was in a condition to assume an economic function, barely fell into the balance. Despite the generous foreign, and particularly American, assistance after the close of hostilities, a substantial bettering of economic conditions did not take place during the first few years. There remained an inflated supply of money over-hanging the economy, and rationing accompanied by flourishing black market activities. Then there was the need to convert the remaining production facilities from war production to peacetime production, coupled with the decartilization policies of the Allied powers. However, with the carrying through of the currency reform on June 21, 1948, by the Western Allied powers in their respective Zones and Berlin sectors, a solid foundation for economic recovery was laid.

The European Recovery Program, the currency reform, the aid given by the Western powers to Professor Ludwig Erhard in a free hand to carry out his economic views, and in implementing his program, worked what is popularly called the "Wirtschaftswunder"—or Economic Miracle. Native initiative and

1. The stock index of the Statistische Bundesamt. December 31, 1953, equals 100.

Dr. Adolph E. Grunewald, associate professor in the Department of Accounting and Financial Administration at Michigan State University, gathered material for this article while in West Germany. There, he was consultant and guest professor to the Fakultat fur Wirtschaftswissenschaften at the Technische Universitat Berlin, under the auspices of the International Cooperation Administration and the Rationalisierungskuratorium der Deutschen Wirtschaft.

enterprising activity, vigorously promoted through taxation policies designed to encourage capital formation and saving, and a willingness of employers and employees to work long hours under difficult conditions were the major operating factors.

Corporate enterprise suffered heavily from the effects of war and its consequences. But with what remained in 1945, operations, though at a very low level, were resumed. With the currency reform, the West German corporations converted their capital stock from Reichs Mark to Deutsche Mark. The conversion ratio, which was an individual matter, was virtually dependent on the relationship of the assets and liabilities which the firm still had under its control on the date of conversion, to the assets which it had owned at war's end.

The large demands of the German consumers, hard work and a taxation policy designed to promote investment, initiated and sustained the economic upswing and resulted in the growing profitability of both large and small firms. Earnings not paid out in dividends were almost immediately reinvested in the business. A functional capital market did not exist. Each firm, if it wished to strengthen its equity capital position, was almost entirely dependent upon self-financing measures.

West Germany's Economy Improves

After the first stormy years, the upward economic movement became steadier. From the accompanying table can be seen the stock market price increases enjoyed by some West German firms and the extent to which dividends, measured absolutely, have risen. However, if related to the stock prices, they have been declining steadily since 1956. Prices, excepting for some individual stocks, however, cannot be considered

Indicative of growing interest in Western German investments is the report that the London Stock Exchange has received an application for listing the shares of August Thyssen-Huette, A.G., famed steel makers. Two international banking houses made this announcement. They are: N. M. Rothschild & Sons, and S. G. Warburg & Co.

Thyssen has an annual capacity of approximately 4,000,000 tons of steel and it is expected that this will be increased by 1,000,000 tons by 1963. Around \$280,000,000 has been spent by Thyssen, since World War II, when most of its productive capacity was either destroyed or dismantled.

Corporation	Capital in Mill. DM (31.5.6)	1953			1954			1955			1956			1957			1958		
		Div. %	Price %																
AEG	310	7	119	8	185,75	9	220	9	193 3/4	10	188,25	12	299 7/8	12	447 7/8				
BASF	700	7	125	8	256	9	226,50	10	187,25	11	180,5	14	323	16	496				
Deutsche Bank	250	8,5	125	9	208	10	238	12	200,5	12	220	14	345	16	585				
Deutsche Erdöl	200	6	118,25	7	182	8	175	9	183	10	180 1/4	10	282	10	315				
Dresdner Bank	220	8,5	126	9	205	10	258	12	207	12	215	14	340	16	595				
Farben Bayer	735	7	127,5	8	257	9	267	10	197 3/4	11	206 3/4	14	328	16	594				
Farbwerke Hoechst	618	7	129 1/4	8	265,5	9	231,5	10	188,5	11	187,5	14	354,5	16	515 1/2				
Mannesmann	580	4	90	7,5	181,5	9	186	10	171	10	162	10	189 7/8	12	310				
RWE (Common Stock)	575	6	132	8	215	9	219	10	205 1/2	10	202 1/4	12,5	363	13	610				
Schering	70	6	144 1/2	7	280	9	217	11	265	11	333	13,5	331 1/2	14	489 1/2				
Siemens & Halske	500	8	137 1/2	8	248	9	264 1/2	9	198	12	197,5	14	326	14	585				
Vereinigte Glanzst.	91,5	8	153	9	199,5	10	230	10	203	12	192	13	336	13	645				

The prices are as of December 31 of each year noted.
All prices are those quoted on the Frankfurt/Main stock exchange.

too high. The initial impression of high prices is in some measure due to the method of price quotation employed. Except for insurance company stocks, and some mining shares, stocks in Germany are quoted as a percentage of par, not unlike the method of quoting bonds in the United States.

The shares of every "Aktiengesellschaft" (that is, corporation) in Germany are so quoted. This is in contrast to the practice in other countries of quoting stock in absolute amounts per unit. Thus, a stock quoted at 150, with a par value of DM 1,000, would cost DM 1,500. If the stock had a par value of DM 700 the cost would be DM 1,050. The annual dividends are also figured and expressed as a percentage of par. The shareholder of a firm declaring a 5% dividend would receive DM 50, if the shares he held were DM 1,000 par value, and DM 35 if DM 700 par value. This method of quoting prices tends to emphasize the discrepancy between market price and par value, a discrepancy which may be present to an equally great or greater extent in the shares of companies quoted on the stock exchange of other countries of the world, but not discernible from the method of quotation.

The situation was further aggravated by the conservative valuations placed on the assets of the firms when they converted their capital stock from Reichs Mark to Deutsche Mark. A corrective possibility was also lacking. The issuance of stock dividends, without the incurrence of a tax liability, was not possible and the managements of the West German firms were not willing to incur this liability to reduce the spread between the market price and the par value of the stock. With the passage of the "Kleine Aktienrechtsreform," or Small Stock Reform Law, and the requisite tax amendment, West German firms will be able to convert accumulated reserves into capital stock through the issuance of tax-free stock dividends, thus tending to eliminate the illusions of a too high market price.

GERMAN CORPORATE ORGANIZATION

The German corporation, or "Aktiengesellschaft" is, as in the United States, a business form of organization whose owners are the anonymous contributors of capital liable for the debts of the organization only to the extent of their capital contributions. This capital, called "Grundkapital," is divided into shares of stock of a specified par value. The firm may issue both "Vorzugsaktien," or preferred stock, and "Stammaktien," or common stock—or only common stock. The former usually bears some preference such as a minimum guaranteed dividend. In most cases it does not carry voting rights. Stocks carrying multiple voting rights are generally prohibited. Only in exceptional circumstances will the issuance of such stocks be approved by the Bundeswirtschaftsministerium.

The stocks may be in the form of bearer paper, order paper, or "Vinkuliert" order paper. The first may be transferred without formality, simply by handing the stock certificate to the purchaser; the second is transferred through endorsement and notification of the com-

pany which records the change of ownership on its stock record books; and the third may be transferred only with the consent of the corporation. The stock of West German firms is almost universally in the form of bearer paper. Par value must be at least DM 100 per share, and a minimum of DM 100,000 "Grundkapital" on authorized stock is required to establish a new corporation. The amount of paid-in capital, however, need not necessarily exceed DM 25,000 to meet the legal requirements as to foundation formalities. The German "AG," equivalent to the United States corporation, is a separate legal entity. The filing of a corporate charter is required, and its economic activities are closely regulated by law. The law even prescribes the form in which the annual financial statements are to be published.

The German corporation is composed of three organs, the "Hauptversammlung," or general stockholders' meeting; the "Aufsichtsrat," or supervisory board; and the "Vorstand," or executive committee. They are supplemented by the "Abschlussprüfer," or certified public accountant.

The Hauptversammlung is the organ of the capital contributors, or owners of the corporation, and it is the organ of final decision. In industrial concerns—except steel and mining—this body elects two-thirds of the board members to the Aufsichtsrat. They may be elected for a period of up to four years. It is not usual for the board members to be elected annually. One-third of the members are elected by the employees.

In the steel and mining community, stockholders elect five members to the Aufsichtsrat, and the employees, five members. Then these 10 men elect an eleventh impartial member to the Aufsichtsrat. The number of members of the board may be increased according to the statutes to 15 (seven employees elected, seven stockholders elected and one impartial member) if the capital stock of the company is in excess of DM 20 million, and to 21 (10 employees elected, 10 stockholders elected and one impartial member) if the capital stock is in excess of DM 50 million. The Hauptversammlung also votes on changes in the corporate charter; approves resolutions to increase or decrease the capital of the firm; decides on the disposition of the annual reported earnings; and selects the Abschlussprüfer.

The Corporate Organization

The Aufsichtsrat, as its name implies, is not an operating organ, but rather a supervisory organ. It watches over the management of the organization; inspects the corporate books; keeps in touch with the regular operations of the firm; and informs itself about any special circumstances or events which may arise. Periodic reports are submitted to the Aufsichtsrat, by the Vorstand, regarding business situations and the condition of the firm. The annual financial statements, presented to the Hauptversammlung for approval and acceptance, are prepared and submitted jointly by the Aufsichtsrat and the Vorstand, or executive committee, which is named by the Aufsichtsrat.

One or more persons may comprise the Vorstand.

And if made up of a number of persons, one of their members is usually designated as "Generaldirektor," or President. The members, however, are all of equal rank and the powers of the Generaldirektor stop short of individual decision-making authority. The Vorstand alone is responsible for the management of the firm. This responsibility may not be delegated nor through some action be placed upon some other organ. Though the Aufsichtsrat formally approves a course of action undertaken by the Vorstand, the Vorstand alone continues to carry the full responsibility for its decisions. The Aufsichtsrat for its part, however, has no power to initiate action, participate in management affairs, or compel the Vorstand to comply with its directives. The contact between Vorstand and Aufsichtsrat is not very close, being generally limited to the periodic meetings and committee contacts.

The Vorstand represents the firm legally and in other matters; draws up the annual financial statements in cooperation with the Aufsichtsrat; calls the annual stockholders' meeting; and prepares matters to be placed before the stockholders for a vote. The affairs and the interest of the firm, the employees, and the stockholders must be considered in all of its decisions.

The Abschlussprüfer, or accountant, is usually a certified public accounting firm. The selection of the firm is by stockholders' vote at the annual meeting. In practice, the Vorstand proposes the Abschlussprüfer to be engaged and the stockholders' vote to accept. The Abschlussprüfer is an entirely independent organ engaged to examine the accounting practices of the firm and audit its books. A report on its findings is required.

Corporate Financial Statements

German corporations are required by law to publish an annual report containing a balance sheet and a profit and loss statement. If the stockholder wishes additional information he has the right, at the stockholders' meeting, to ask and receive the answer to any question regarding the affairs of the firm. The Vorstand is obligated to provide the information requested, except if the public disclosure of the requested information would not be in the best interests of the corporation.

The decision as whether or not the disclosure of the information would be in the best interests of the firm rests with the Vorstand. If the Vorstand is of the opinion the information requested, in the interests of the corporation must be kept secret, the shareholder has little recourse. However, the shareholder may, if arbitrarily refused any information, challenge the decision of the "Hauptversammlung"—the general stockholders' meeting. Moreover, he may force the "Vorstand" to disclose the information requested through instituting legal proceedings. Practically, however, only the major stockholder can gain a deeper insight into the affairs of his firm through having himself elected to the Aufsichtsrat, the supervisory board. From this vantage point he may examine the books of the corporation. This right is withheld from the general stockholder.

Normally, the balance sheet and the profit and loss

statements are a good starting point in an analysis of the position of a firm. What an outsider, or small stockholder, could learn about a German corporation from these documents in the past, however, was not overly informative. Generally, in the past, the legal provisions governing the publication of German corporate financial statements did not permit an individual to obtain a clear and accurate picture of the financial health and profitability of the firm.

The balance sheet, drawn up by the management and presented to the stockholders for approval and acceptance, in the past, was usually manipulated in such a manner that the resulting earnings figure, which appeared on the balance sheet, was just the amount which management felt was an appropriate distribution of earnings in dividends for that year. Management then proposed that all—or almost all—of this amount be distributed in dividends. Stockholders, at the annual meeting, then voted to have this amount distributed. Dividends are generally paid once a year after the main stockholders' meeting.

The "Referentenentwurf," or legislative draft of a new stock law, is published at the end of the year. Under this draft, management is permitted to make provisions only for supportable depreciation and necessary reserves. The building of large secret reserves should not be allowed. The earnings figure, appearing on the balance sheet, should fairly reflect the earned income of the corporation for that year. The stockholders should be given the opportunity to express their opinion by vote regarding the disposition of the total earnings for the period. That is, it should be left to the stockholders to determine the percentage of the earnings to be left in the business and the percentage to be paid out in dividends. The "Regierungsentwurf," or legislative draft of the cabinet, which is the final proposal to the legislature by the government, published in March of this year, however, returns to the law currently in force regarding decisions on earnings.

Toward a Clearer Analysis

The profit and loss statement, when drawn up according to the minimum requirements of the previous corporate stock law, left numerous questions in the mind of the Financial Analyst. The most important was the amount of total sales, or gross revenue. The German corporation could balance off the total sales figures with various expenses, particularly material costs, and report only the net figure. The four major accounts which had to be reported were: wages and salaries, social contributions, depreciation, and taxes. The net result was the reporting of a figure resembling the American concept of Gross Profit. With the recent passage of the "Kleine Aktienrechtsreform," the German corporation is now required to report its net sales figure undebited by various other accounts, except price discounts and returns and allowances. This will enable the outside shareholder of West German firms, in the future, to make a more reasonable evaluation of the profitability and prospects for the enterprise.

CONCLUSION

West German corporations have shown good profits in the post-war period. However, the retention of a large percentage of corporate earnings is not equally acceptable to all shareholders. To give the West German corporations more incentive to pay out a large percentage of their earnings in dividends, the federal corporate tax law was amended in 1958. The new provisions provide for a tax of 51% on earnings retained in the business, and a tax of 15% on those earnings distributed in the form of dividends.

The new corporate income tax provision, and the Kleine Aktienrechtsreform, were designed to improve the position of the small stockholder and promote widespread stock ownership among the public. Stock ownership in West Germany, it is felt, should become a more regular and popular form of investment. Working to further this goal is the issuance of "Volksaktien," or people's stock.

The first big issue came in the spring of 1959 with the offering of DM 120 million (approximately \$29 million) worth of shares in the Preussische Bergwerk and Huetten AG. Each employee, and any private individual whose annual income did not exceed DM 16,000, had the opportunity to buy five shares of the new offering of Preussag, a mining, oil-drilling, and steel company. The employees, however, were guaranteed prior rights to subscribe. This is the first of numerous companies West Germany hopes to sell to the people. All are 100% owned by the Federal government. Most notable of the companies remaining is the Volkswagen Werk GmbH. These measures have already begun to have a noticeable effect. Broad sections of the population barely realized what a stock was a few years ago. Many of these people today are stock owners.

GROWTH (An Editorial)

(continued from page 3)

decided to publish the series for general distribution rather than attempt the Herculean task of area coverage by personal appearance.

This magazine, through its *Readers Service*, has processed hundreds of requests for Allied's booklet. And from words of praise, gratuitously included with the requests, this type of investment aid bids fair to become a regular facet of financial education.

Then, Pacific Finance Co. and the Bank of New York joined in coverage of *Sales and Consumer Finance*. As the sessions revealed the romance and growth potentials of this hitherto "generally assumed to be prosaic" financial-lending business, popular demand again made publication a "must." Again, our *Readers Service* to the fore!

All of which is to say that competition and alert management teams improve on initially successful developments. And this time it was Texas Eastern, seeing the fruits of a better understanding between Management, Financial Analysts, and Investors, expanding the original idea to yield even greater positive results.

GULF PRESS CONFERENCE



A service of Gulf Oil Corporation in the cause of creating—through the facts as we see them—a fuller understanding of the oil industry.

Size for whose sake?

Big Business, some will answer quickly, serves only itself. Its aims, as they see it, are fewer and fewer competitors, fatter and fatter profits. They ignore the fact that much of today's business is big simply because it *has* to be big to supply our needs. Let's look at a few facts on business that are all too often overlooked.

Q. These days, exactly how big is the job Oil must do?

A. Let's express it in production figures. These, of course, only hint at our huge consumer appetite for oil. The industry refined 2,789,404,000 barrels of crude oil in 1958. That's more than 7,642,000 barrels a day. We also drilled 47,758 new wells. Doing so helped add 235,512,000 barrels to our proven petroleum reserves underground. That's one more assurance we can continue to meet our needs for oil tomorrow.

Q. In doing this job, don't a few big companies dominate the rest of the industry?

A. Not at all. The industry includes some 12,000 individual oil producers and 28,000 individual marketers. And there are 291 operating refineries in the U. S. owned by 186 different companies. No one or two or ten of these companies monopolize the business.

Q. How is the volume of business spread among these refiners?

A. In 1958, the largest refiner had 10.3% of all refinery production. The top five refiners together had 37.9% of this "run." The top ten had less than 61%. Refining is big business—but it doesn't rule out healthy competition.

Q. But why must refining companies be big business in the first place?

A. A few statistics may help answer that one. Today's standard 50,000-barrels-a-day refinery costs about \$75-80 million. And while the outlay for capital equipment for all U.S. industry runs to \$17,900 for each production worker, it comes to \$77,700 for the refining industry. A small business could hardly afford that.

Q. Up to now we've talked a lot about refining. What of exploration?

A. Our driller today spends \$13.80 to drill just a single foot. And, on an average, he must go down 4,160 feet to find oil—if he finds it at all. A "dry" hole cost \$2,000 in 1859 when the U. S. oil industry was born. Today it can run up to \$3 million. Yet, drilling costs are only part of the picture. Companies now searching for oil in offshore waters, just as an example, operate the biggest helicopter service in the world.

Q. Then there is little room for the "loner" in the oil industry.

A. As far as risky foreign operation and costly offshore exploration go, this is perhaps so. But onshore, here at home, no. Take drilling. The small "independents" were able to provide three out of eight barrels of oil the U.S. produced. Also, most of the country's 574,900 oil wells are small producers, averaging 11.7 barrels a day. So, there is a special need for these "independents." But their oil must be transported by pipeline, and often by tanker, too, to its refinery destination. This again is big business.

Q. Do we need bigness at the selling end of the business too?

A. No, as we already said, there are 28,000 marketers in the oil industry. And there are about 200,000 primary service stations selling oil products to the public. About 90% of these stations are owned by small independent businessmen.

Q. You suggested before that bigness helped at the gas pump. How?

A. It has helped raise the quality of oil products while holding down the cost to

the public. For example, to raise gasoline octane by just one number to meet the needs of today's high compression automobile engines costs the industry some \$200 million. And oil has kept up with the costly race to boost quality without an appreciable rise in prices.

Q. Can you cite some figures on price holding?

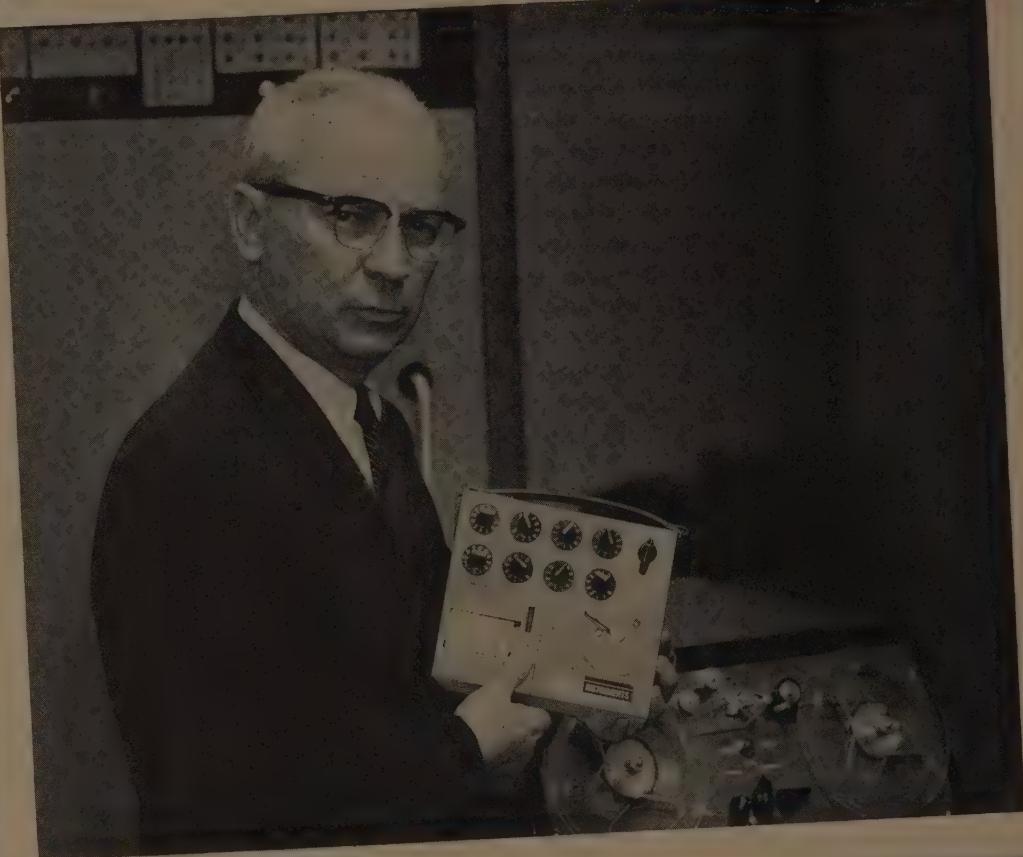
A. Gasoline prices, excluding Federal and State taxes, averaged 20.27¢ a gallon in 1949, against 21.09¢ in 1959. That's a rise of less than a penny a gallon in over ten years. Of course, gasoline taxes jumped from 6.52¢ to 10.12¢ in the same period. The whole range of oil product prices has risen far less than the U. S. index of retail commodity prices.

Q. Even so, aren't oil industry profits way above other industries?

A. Hardly. The stiff competition, the risks of exploration, and the rising costs we spoke of, all help keep oil profits down. The industry's net income after taxes in 1958 was 10.2% of net worth, against 9.8% for all manufacturing. Bigness does *not* mean exorbitant profits.

Q. If bigness hasn't meant exorbitant prices or profits, hasn't it given the oil industry undue power in our government?

A. If anything, it's the other way around. The criticism that bigness has got to be "badness" dogs the oil industry in devious ways. The industry, for example, has been called on the carpet by one branch of government for doing what another branch has asked. But, often the public only remembers the headlines of the charge, even though no basis for it existed. Again and again, big business is hurt by lack of knowledge about it. The best defense for bigness is helping people understand it.



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Common Stocks as an Inflation-Hedge

by Stephen H. Archer

INFLATION IS USUALLY ASSUMED to mean a period of rising prices for the products and services purchased by the individual, business, and government unit.

Without digressing into the causes of inflation and the various tools of inflation combat, it is generally assumed that the effects of inflation include erosion of the purchasing power of those dependent upon fixed pensions or income for their support. If it is accepted that there exists the possibility of further inflation (controlled or uncontrolled) then this discussion may be helpful to investors in the preservation of their estate and income. An investment in savings accounts, bonds, mortgages, or other fixed-dollar obligations or investments is a gamble on stable or falling prices.

In the 13 years since 1945, the dollar, in terms of its ability to purchase goods and services, has fallen in value approximately 38%.¹ During this period, in order for an investor to maintain the purchasing power of his estate, his investments would have had to yield about 4% compounded annually. To prevent the possibility of a zero, or negative real rate of return, and to achieve a reasonable real income, the individual or institution would have to seek other types of investments which may be subject to greater or at least different types of risk. It is the purpose of this article to examine theoretically and empirically one type of investment media which is generally considered to protect the individual or his intermediary, the institution, against the effect of rising prices, namely, common stock.

1. Footnotes are at end of article.

Dr. Stephen H. Archer, assistant professor finance at the University of Washington, formerly was employed by J. M. Dain & Co., Minneapolis, as security trader and later as a security salesman. He received his Ph.D. from the University of Minnesota.

'Theoretical, Inflation-Hedge'

Common stock is not the only alternative available to the inflation conscious investor; investment in commodities and real estate have also been advocated as alternatives. However, common stock is widely used for this purpose and displays, in varying degree, the qualities of good markets, low administrative costs, convenient denominations, and a wide range of selection enabling diversifications against other risks.

It has generally been implied in investment literature that investment in common stock will result in protection against inflation.² A theory purporting to explain why common stock does act as an inflation-hedge states that common stock represents the residual ownership of the productive facilities of a company, and during inflation the values of the facilities would rise and thus prices of common would rise.³

This theory assumes the values of common stock depend upon the values of the facilities in the business. This is misleading for the prices of common stock are usually assumed to be more directly a function of the income or cash generation than of physical plant.⁴ The value of the facilities and the value of the common stock of the business are a function of a common factor: earning ability of the business, although the short-comings of our analytical techniques do not allow a precise determination of the nature of the functional relation, or the parameters of the function.

If it can be accepted that earnings are a prime determinant of dividends and value, then the usefulness of common stock as an inflation-hedge depends upon a key assumption, that residual earnings of a business increase as prices rise, which in turn should generally increase dividend income and common value. Is it logical to expect that earnings

of these corporations will increase as general prices rise?

An argument can be made that, during inflation, the prices of the product or service sold will advance and the costs (depreciation, depletion, etc.) incurred in production of these goods, will not increase as rapidly as selling prices. In other words, costs charged against current revenue have been incurred in past time-periods when prices were lower. If the earnings being referred to here are the reported earnings of companies, then these reported earnings are also affected by the accounting methods employed in their calculation.

The *lifo* method of accounting for the cost of inventory, for example, generally tends to reduce the beneficial effects of inflation on reported earnings, although the cash flow would not be altered except to the extent of income tax payments. However, the theoretical result is that as income and cash flow advance in inflation, due to more rapidly rising selling prices than costs, the dividends and market value of common stocks will tend to rise. The institution or the individual in an operating sense is faced with the decision on the selection of an individual issue, or at least a group of issues. Can one proceed to select any common stock and expect to be protected against inflation? This depends of course on how true the theory is for each of a large number of issues, which raises a number of questions.

Relationship of Prices

It is generally known that the selling prices of goods and services sold in many industries are not free to rise as inflationary demand increases. The railroad and public utility industries' rates do not increase as the demand for their services increase; but their prices, or rates, tend to increase only as or

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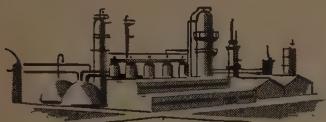
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after their costs increase. Other industries face a demand situation in which their selling prices are resistant to change, such as chewing gum or perhaps soft drinks. Other industries, because of their competitive situation, either within or without the industry, may not be able to advance prices as inflation occurs, at least not until the whole industry is caught in a cost squeeze. Other situations may be referred to such as agriculture and gold mining where government interference alters selling price flexibility. Companies in these and similar industries may not have the price responsiveness that the theory implies.

It is also known that companies vary in their cost structures. Many firms use assets with an average life which is very short and as these assets are consumed, they must be replaced in order for the business to continue operations. Increases in costs then may approximate the increases in revenues, so that profits remain constant or even decline in real terms. Most service industries, as well as companies in other industries, face such cost conditions.

It appears that not all common stocks should act as an inflation-hedge. Only those with sufficient price sensitivity and costs which reflect past prices should be used in this manner. The older the costs matched against current revenue, and the larger the proportion of these costs to total costs, the greater the tendency for the concern to have a rise in reported profits which may match or exceed the rise in the price

level. These reported or accounting profits are the profits generally used by the investor to make his investment decision, although it certainly may be expected that in the long run real profits may be the stronger determinant of dividends and price gains of the stock over a long period of years. If one accepts this theory of why common stocks act as an inflation-hedge, then the investor must be selective in his choice of issues whose function it is to contribute to the protection of his estate and income against inflation.

COMMON STOCK PERFORMANCE

If this seems sound in theory, has it held true in actual cases of recent times? Although the following discussion will not in any manner prove the above theory, it may be at least worthwhile to observe if the limited observations below refute the theory. If the theory seems logically the most satisfactory at this limited level of analytical sophistication, and if the limited data do not reject the theory, then it would appear that this theoretical model would be chosen over others for the purpose of investment decisions in this aspect of investments. A few sample empirical checks of this theory seem generally in agreement with the theory. Clendenin⁵ compared the performance of a few individual companies, as well as stock indices, with the change in the price level. Indices of the performance of bank, utility, and rail stocks indicated that on the average the earnings, divi-

Table I*
Performance of Common Stock of Companies in Major
Industries as Inflation-Hedges¹⁰

Common Stocks of	A. All Time Periods			B. Price and Dividends		
	(a) Price	(b) Earnings	(c) Dividends	(1) 1935-50	(2) 1935-55	(3) 1945-55
Banks	10%	0%	10%	20%	10%	20%
Public Utilities	50	14	23	14	23	43
Rails	58	32	11	11	16	32
Casualty Insurance Companies	62	25	50	50	50	62
Fire Insurance Companies	44	25	38	31	44	50
Industrials	50	48	31	32	37	50

*The body of the Table shows the percentage of the companies in each major industry, (A) whose common stock (a) price, (b) earnings, or (c) dividend rise equaled or exceeded the increase in the Consumer Price Index in all of the time periods, and (B) whose common stock's price and dividend increase equaled or exceeded the rise in the Consumer Price Index in (1) 1935-50, (2) 1935-55, (3) 1945-55.

Table II A

Inflation-Hedge Industries*
(All Time Periods)

Industry	Total Number of Companies in the Industry	Earnings	Price and Dividend	Earnings, Price, and Dividend
Oil	18	100%	50%	55%
Soap manufacturing	2	100	100	100
Electrical equipment	6	83	83	67
Chemicals	11	82	55	55
Rubber goods	5	80	20	20
Construction machinery	4	75	50	50
Confectionary	4	75	50	50
Copper	7	71	29	29
Finance & small loans	7	71	43	43
Aircraft manufacturing	6	67	17	17
Aluminum	3	67	0	0
Sulphur products	3	67	67	67
Metal mining & smelting	8	63	0	0
Drugs	10	60	30	30
Floor coverings	5	60	20	20
Lead & zinc	5	60	20	20
Office machinery	5	60	40	40
Steel manufacturing	10	60	30	30
Building materials	17	59	35	29
Paper	7	57	57	43
Auto, trucks, parts	19	53	37	37
Metal fabricating	4	50	0	0
Shoe manufacturing	4	50	25	0

*The Table indicates the total number of companies in each industry, the percentage of those companies' common stock whose (1) earnings, (2) price and dividend, (3) earnings, price, and dividend, increased as much or more than the Consumer Price Index in all of the time periods.

Table II B*

Non-Inflation Hedge Industries
(All Time Periods)

Industry	Total Number of Companies in the Industry	Earnings	Price and Dividend	Earnings, Price, and Dividend
BANKS	10	0%	10%	0%
Gold Mining	8	0	0	0
Leather	2	0	0	0
Shipbuilding	2	0	0	0
Shipping	2	0	0	0
Tobaccos	9	0	0	0
Sugar products & refining	11	9	0	0
Specialty mach.	6	17	0	0
Printing & publishing	6	17	0	0
Motion pictures	6	17	0	0
Agricultural machinery	5	20	0	0
PUBLIC UTILITIES	20	25	15	10
FIRE INSURANCE	16	25	38	19
CASUALTY INSURANCE	8	25	38	13
Coal mining	8	25	0	0
Machine tool	4	25	0	0
Vegetable oils	4	25	0	0
RAILROADS	19	32	11	11
Brewing and Distillers	6	33	0	0
Soft drinks	6	33	0	0
Fertilizers	3	33	33	33
Radio, TV, electronics	6	33	0	0
Textile & apparel	10	40	40	20
Containers—Metal & glass	7	43	14	14
Retail trade	30	43	30	27
Rail equipment	9	45	0	0
Industrial machinery	13	46	31	31
Food processing	27	48	19	19

*These 28 industries exhibited less than half (50%) of their companies' common stock as an inflation-hedge, using earnings as a criteria, in all three time periods. The Table shows the total number of companies in each industry, the percentage of those companies' common stock whose (1) earnings, (2) price and dividend, (3) earnings, price, and dividend, increased as much or more than the Consumer Price Index in all time periods.

dends, and market prices were not able to keep up with inflation.

Many discussions or studies have been made of common stocks as an inflation-hedge,⁶ but in general the studies deal primarily with stocks as a group. Particularly for the individual investor, selection of the individual issue can be important, and it seems desirable then to look at common stock on an individual basis to determine if the results of companies in various industries tend to support or not support the theory. This can be done by selecting many companies to compare their results with the consumer price index.

Representative Companies Selected

Such a group of companies was then selected. A large representative selection of stocks was available in the Standard and Poor's indices of 420 industrials, 20 railroads, 39 public utilities, 16 fire insurance companies, and 8 casualty insurance companies, representing about 90% of the value of all stocks listed on the New York Stock Exchange.⁷ Of this large group of companies included in the index as of 1955,⁸ some had to be dropped from the study because of lack of complete information over the time periods used. The total usable sample included 436 companies. For these issues, earnings, prices, and dividends were compared with the Consumer Price Index for the periods 1935 to 1950, 1935 to 1955, and 1945 to 1955. *Tables I and II A-B* show the results of this investigation.

Ten, 15, and 20 years time periods were selected, using two different terminal dates. The beginning dates were 1935 and 1945, and the terminal dates were 1950 and 1955. In the selection of these time periods, it was desirable to avoid selecting relative highs or lows in the market.⁹

In *Table I* the common stock's price, earnings, and dividend increase were compared to the Consumer Price Index. The author does not mean to imply that all three or any one of these is required for a stock to be termed an inflation-hedge. From the investor's view, one might argue that if the price rise

and the dividend rise equals or exceeds the Consumer Price Index, he has been adequately protected.

One may also argue quite reasonably that if the earnings on common rise more than the Consumer Price Index, the investor also has been protected, for in most cases one would expect that the price would rise and the dividends would increase approximately with earnings, although there are other factors affecting the dividend increase and price rise. In order to allow the reader some choice as to what he considers an inflation-hedge, the Tables here compare Consumer Price Index with varying combinations of price, earnings and dividends.

Although *Table I* shows some differences between time periods, it nevertheless appears that common stocks of banks, public utilities, and rails fared poorly as inflation-hedges. Whereas, industrials did not appear to do as well as might be expected, it is understood that the industrial grouping includes a very heterogeneous group of companies. The industrial group is broken down in *Table IIA* and *Table IIB* into 46 industries.

Twenty-five industries contained 50% or more companies with earnings per share growth that exceeded the increase in the Consumer Price Index in all three time periods of study. Notably there are several natural-resource industries included, as would be expected by applying the theory of common stocks as inflation hedges. Among these are oils, coppers, aluminums, sulphur producers, diversified metals, and lead and zinc.

Some companies in other industries are integrated to the extent of being in part natural-resource industries, such as rubber, chemicals, steels, and building materials producers. In general it does appear that most of these industries do contain the ingredients required in theory; namely, large proportion of fixed or sunk costs and price flexibility.

Table IIB lists the other industries in which less than 50% of the companies exhibited an earnings

hedge in all three time periods. The companies are listed in inverse, the least satisfactory industries first.

Included in this group of industries are several natural-resource industries. Gold mining would be expected to appear in this list because of its sales price inflexibility. Coal mining understandably did not do well because of the enormous secular decline in the demand for coal in this period. Included in the list are a number of industries facing relatively fixed selling prices, such as public utilities, insurance, and rail industries. Also included are a number of industries that would be classed as low fixed or sunk cost industries, such as retail trade and apparel.

If it is not already apparent to the reader, there are significant qualifications to the acceptance of these results. In some cases the number of companies in the industry sample was extremely small, reducing the value of the results. It should also be recalled that many of these companies are very large organizations, so diversified as to be involved with many industries and thus making difficult their classification in one industry group.

More important than either of these two qualifications, it must be noted that the method of analysis used produced results which are inescapably entwined with the secular growth and decline in the demand for the industry's products. The gains in the oil industry, for example, were to a large extent at the expense to the coal mining industry. These results must be interpreted with these limitations but should not prevent the assimilation of the results.

Footnotes

1. Federal Reserve Bulletin CLV (May 1959), p. 546.

2. For such a discussion see Harry C. Sauvain, *Investment Management*, 2nd ed. (Englewood Cliffs: Prentice-Hall, Inc., 1959), pp. 136-142.

3. For a brief discussion of this theory see Douglas A. Hayes, *Appraisal and Management of Securities* (New York: The Macmillan Company, 1956), p. 353.

4. See, Graham and Dodd, *Security*

Analysis (New York: McGraw-Hill Publishing Co., 1951), p. 454.

5. John C. Clendenin, *Introduction to Investments*, 2nd ed. (New York: McGraw-Hill Publishing Co., Inc., 1955), p. 103. See also John C. Clendenin, "Price-Level Variations and Tenets of High-Grade Investment," *Journal of Finance*, May, 1959, pp. 252-60.

6. K. S. van Strum, *Investing in Purchasing Power* (New York: Barron's, 1926); W. C. Greenough, *A New Approach to Retirement Income* (T. I. A. A., 1951); *More Inflation*, 4th Edition (New York: Standard and Poor's Corporation, 1950).

7. George L. Leffler, *The Stock Market*, 2nd Edition (New York: The Ronald Press Company, 1957), pp. 533-34.

8. *Security Price Index Record* (New York: Standard and Poor's, Inc., 1955), pp. 14-107.

9. One may have considered the choice of time periods other than those used. The choice of the three used was based only on the selection of a limited number of time periods with some differences in beginning and ending times. The beginning and terminal dates were chosen to avoid extremes in the market—either high or low. An investigator may have considered the choice of a period beginning with one high and ending in another, or from low to low. However, in this 20-year span this would have yielded only one time period, ending in 1946. It is questionable whether a time period selected in this manner would be better than those arbitrarily chosen as in this investigation.

10. Glenn L. Johnson, "An Empirical Analysis of Common Stocks as Inflationary Hedges," (unpublished Master's thesis, The University of Washington, Seattle, 1957), p. 105.

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Rate of Return on Common Stocks

by Eugene M. Lerner

IF ONE INVESTS IN COMMON STOCKS today, what rate of return can he reasonably expect to receive?

No one can give an unqualified answer. But as long as the future continues to resemble the past, the Financial Security Analyst can develop some clues to the answer. For he can ask and answer a related query: What rate of return did people receive during the great bull market of the past decade?

The top panel in *Figure I* shows the Dow Jones composite average of 65 stocks from June 1947 through March 1960.¹ From a low of 59 in mid 1949, the average climbed to a peak of 226 in mid 1959. Some components of the average reached relatively higher levels; others did not attain this peak (See *Table I*).

For our purposes however, the rate of change in the D-J composite average is more important than its absolute rise. For during the great bull market, the rate of change fluctuated widely, and as a consequence, the rate of return moved through wide ranges.

Panel 2 of *Figure I* shows the change in the D-J composite average from same month one year ago. This figure should be interpreted as follows: if an investor bought the entire D-J average in January, 1947, and sold his holdings one year later—ignoring commissions and taxes—he would have realized neither a gain nor a loss. For the D-J average was 65 in both months. If he had purchased the average in May 1947, and sold in May 1948,

1. Footnotes at end of article.

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however, his securities would have appreciated by almost 16%.

During the great bull market, the rate of return on investment measured by price changes in the D-J average from year ago levels² moved through three distinct cycles.

Dating the cycles from trough to trough, the first run from June 1949 through September 1953. The peak return, reached approximately one year after the cycle began, was about 28%. The lowest return, marking the end of the cycle, was a negative 5%.

The second cycle lasted from September 1953 to December 1957. The peak return, over 34% came approximately one year after the cycle began. The lowest return was a negative 15%.

The third cycle began in January 1958. It has not as yet ended. The peak, which again came approximately one year after the cycle began, was passed in March 1959. The terminal trough however has not been defined.

This analysis offers the first clue for determining what rate of return an investor can expect on common stocks. If the future continues to resemble the past, the rate will depend upon the timing of the purchase. In some years an investor buying the D-J composite average can earn over 30% through price appreciation alone. In other years, the investor will sustain losses of from 5 to 15%.

Dispersion in Stock Prices?

A potential buyer may affirm that analyzing the movement of the D-J average is important. He may acknowledge that his expected rate of return through price appreciation fluctuates cyclically rather than remaining stable. But, a person buys individual securities, not averages. When the D-J average rises by, say, 10%, what percentage of stocks rise by much more than 10% and what percentage by much less. How much dispersion is there in the movement of stock prices?

A detailed study of the price movements of 50 individual securities, from June 1947 through December 1959, was carried out to answer these questions. These securities were selected so that they would be typical or representative of a much larger number of stocks.³ What did this analysis of 50 securities reveal?⁴ The most important results are plotted in *Figure II*.

The top line, labeled 20, indicates the rate of return earned through price appreciation alone by at least 20% of the securities. It is to be interpreted as follows: If a portfolio of stocks selected at random were purchased in December 1947, and sold in December, 1948, 20% of the securities in the portfolio would have appreciated by 9%. Eighty percent of the securities would have risen less.

The line labeled 50 indicates the rate of return earned by at least

Table I
Dow Jones Averages in June 1949 and July 1959

		Class, 1949 (1)	July 1959 (2)	Ratio: Column 2 ÷ by Column 1
Industrials	High	168.2	674.8	401.1
	Low	161.6	650.9	402.8
Railroads	High	45.6	173.6	380.7
	Low	42.9	165.8	386.5
Utilities	High	35.0	90.0	257.1
	Low	33.8	87.8	259.8
Composite	High	60.5	233.5	385.9
	Low	57.8	217.8	376.8

Figure I
The Dow-Jones Composite Average of 65 Stocks

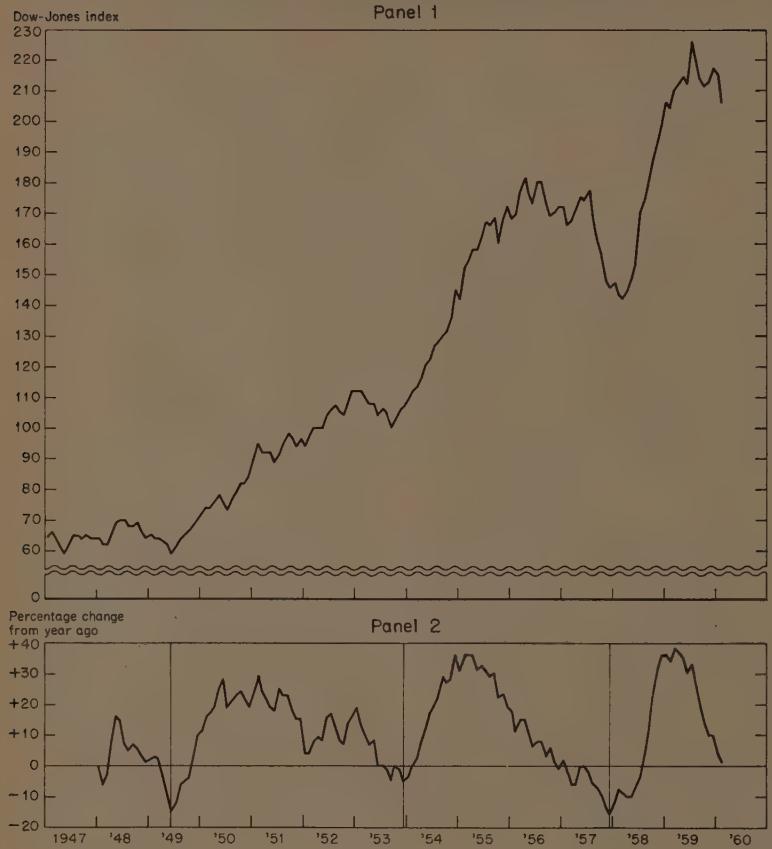
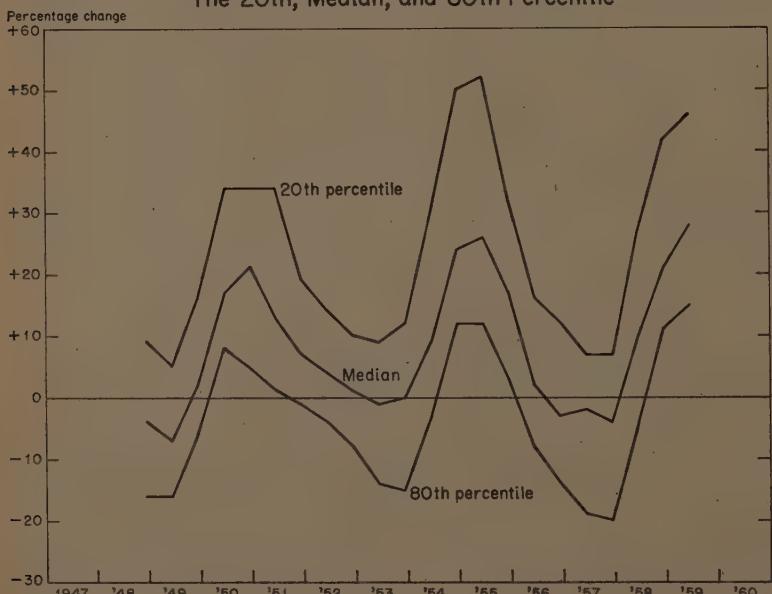


Figure II
The Percentage Change in Price of 50 Securities from Year Ago Levels
The 20th, Median, and 80th Percentile



50% of the securities. Thus, if a portfolio of stocks, selected at random, were purchased in (say) June, 1949 and sold in June, 1950, 50% of the stocks would have appreciated by at least 17%.

Similarly the bottom line, labeled 80, indicates that 80% of the securities in the portfolio earned this return or more. From June, 1949 to June, 1950, 80% earned at least 8%. Twenty percent appreciated less, or actually declined in price.

Note that during every year of the great bull market, 20% of the securities in the portfolio appreciated by at least 10%. Frequently, 20% of the securities yielded well over 40%.

On the other hand, at least 20% of the securities chosen at random frequently fell in price over a one year period. The difference in the rate of return between the 20th and 80th percentile typically ranged between 20 and 30%.

The data in Figure II can be generalized. Even if the timing of purchases is excellent, the rate of return on a portfolio through price appreciation can vary widely, depending upon its composition. If the future continues to resemble the past, proper security analysis can lead to handsome, even generous, returns. If the analysis is faulty, however, the rewards will be meager indeed.

Importance of Timing

The analysis of the D-J average emphasized the importance of timing. The analysis of individual securities dramatized the importance of security analysis. How important are dividend payments in the total rate of return? May not a consideration of dividend payments, as well as price appreciation, alter these conclusions?

It is of course, correct to express the rate of return as the sum of dividends received, and the price appreciation over a year divided by the price paid for the security.⁵ Stated algebraically; equals

$$\frac{D + P_2 - P_1}{P_1}$$

where P_1 and P_2 are the prices prevailing in periods 1 and 2.

To estimate the importance of

Table II
The Rate of Return before Taxes on Common Stocks, 1947-1957
(in per cent)

percentile	Dec. 1947	June 1948	Dec. 1948	June 1949	Dec. 1949
	to Dec. 1948	to June 1949	to Dec. 1949	to June 1950	to Dec. 1950
20	-11.0	-08.7	02.7	08.9	10.4
median	05.2	-00.2	08.1	24.7	26.2
80	17.3	10.8	27.2	41.2	43.7
percentile	June 1950	Dec. 1950	June 1951	Dec. 1951	June 1952
	to June 1951	to Dec. 1951	to June 1952	to Dec. 1952	to June 1953
20	06.0	06.0	02.6	-03.7	-08.0
median	21.2	14.6	10.9	04.7	04.8
80	40.4	27.7	21.2	16.4	12.3
percentile	Dec. 1952	June 1953	Dec. 1953	June 1954	Dec. 1954
	to Dec. 1953	to June 1954	to Dec. 1954	to June 1955	to Dec. 1955
20	-10.0	03.9	19.1	18.9	08.5
median	06.0	18.8	29.7	32.5	21.7
80	18.8	36.8	54.4	55.5	38.0
percentile	June 1955	Dec. 1955	June 1956	Dec. 1956	June 1957
	to June 1956	to Dec. 1956	to June 1957	to Dec. 1957	to June 1958
20	-02.4	-08.7	-16.3	-18.8	01.1
median	07.4	02.5	01.9	00.3	15.0
80	21.6	17.6	12.6	13.3	27.8
percentile	June 1958				Dec. 1957
	to June 1959				to Dec. 1958
20	18.7				
median	31.6				
80	51.8				

Source: Wall Street Journal

dividend payments in the total rate of return, the annual dividends paid to the holders of the 50 securities previously studied were noted. New rates of return were computed according to the above formula for each period from 1947 through 1959. Once more the rates were ranked from high to low. The results for the top 20, 50 and 80% of the securities are presented in *Table II*.

These rates of return are three or four or five percentage points higher than the corresponding figures presented in *Figure II*. They do not, however, alter either of the two major conclusions reached in this study: (1) that there are great cyclical swings in the rate of return on common stocks; and (2) that the dispersion in the rate of return among securities is so large that

careful security analysis will be well rewarded.

This is not to state that dividend payments are unimportant. A change in the dollar dividend may be one of the important factors leading to price appreciation or decline. Moreover, in many instances the rate of return arising through the dividend payments was larger than the rate arising through price appreciation.

To return to our opening question: If a person were to invest in common stocks today, what rate of return could he reasonably expect to receive? This study has shown that during the past decade, timing and analysis spelled the difference between success and failure. If this has been the history of the greatest bull market in recorded time, how much more true will it be in the future!

Footnotes

1. The figures presented are the arithmetic means of monthly high and low values.

2. The statistical measure — percentage change from a year ago — was selected for its simplicity and convenience. It is obvious that the change between any arbitrary period can be expressed as an annual rate. To perform these computations, however, requires additional calculations. Moreover, the measure selected is now in common use and is easily understood. It expresses at once the annual rate of change. This then is precisely the statistic that is required to measure rates of return over time.

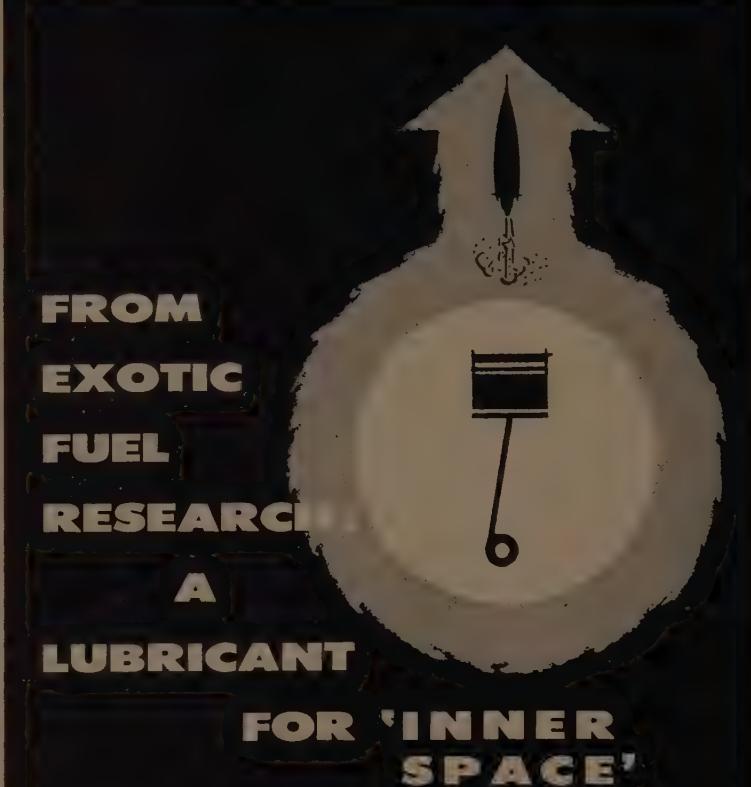
3. The method employed in selecting the 50 securities was as follows: All the securities listed by a standard rating service were ranked according to their quality grade. To assure that the selection would be random, the proportion of A, B, and so forth, securities in the universe were maintained in the sample. Thus, if the rating service indicated that there

were four times as many B stocks as C stocks, this four to one ratio was maintained in the sample. The actual securities within each quality grade were selected at random. The price of each of these 50 securities was adjusted for stock splits, and the value of the stock in June and December of each year was recorded on a worksheet. (Only two months were selected to reduce the number of calculations). The percentage change in the price from year ago levels was computed, a three period moving average was computed, and the 50 securities were ranked according to their percentage change in each period.

4. The fifty securities in the sample are the following:

American Airlines
American Chicle
American Tel. and Tel.
Anchor Hocking Glass
Armco Steel
Associated Dry Goods
Atlas Powder
Avco Manufacturing
Bayuk Cigars
Braniff Airways
Brooklyn Union Gas
Brunswick Balke Coll.
Chesapeake and Ohio R.R.
Cleveland Electric
Colgate Palmolive Co.
Columbia Broadcasting
Commercial Solvents
Corn Products Corp.
Du Pont de Nemours
Eastern Airlines
Erie R.R.
General Baking
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Glidden
Holland Furnace
Holly Sugar
Houston Power and Light
Int'l Business Machines
International Harvester
Libby, McNeill
P. Lorillard
R. H. Macy
Minneapolis Moline
Ohio Oil
Pacific Lighting Corp.
Republic Steel
Scott Paper
Simonds Saw and Steel
Smith Corona Marchant
Standard Oil (New Jersey)
Standard Oil (Ohio)
Studebaker Packard
U. S. Industries
U. S. Playing Card
Vanadium
Va. Carolina Chemical
Washington Gas Light
Western Auto Supply
Yale and Towne

5. Dividends and capital gains are taxed at different rates. As a consequence the after tax value of one dollar in dividends, and one dollar in capital gains, vary from person to person. A study combining dividends and capital gains must be limited to a before tax basis.



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Dollar Averaging in Theory and Practice

by Leonard W. Ascher

AMONG THE BELIEFS STRONGLY HELD in financial circles today is that dollar averaging is a high road to financial success.

Investors are advised to put a constant dollar sum into common stocks at regular intervals, regardless of price. Not only will such a program overrule the emotional urges to plunge into stocks when the market is booming, and to dump stocks at ruinous low prices, but it will automatically provide investors with stocks at bargain prices. Dollar averaging is offered as a technical device, a mathematical principle, that "unfailingly produces superior results."

The program is simplicity itself: buy a constant amount of common stocks, say, \$600 every quarter year. Some purchases will be made at high prices, some at middle prices, and some at low prices; but at high prices few shares will be obtained, and at low prices many will be gotten for the constant dollar sum. The result will be a portfolio purchased not at average prices, but at weighted average prices, the majority of shares bought at low prices.

The process may be illustrated by a hypothetical investment program. Assume that at the beginning of each period a fixed sum, \$600, is committed to an average common stock portfolio (for this we will invent a mutual company and call it the Average Fund). In this example stock prices will fluctuate between \$10 and \$30 in a regular cycle. To give the system a fair test, asking neither too much nor too little of it, let us start and end with the middle price for stocks, carrying operations through a complete cycle of fluctuations.

In the first period, see *Table I*, the \$600 programmed will buy 30 shares at \$20 per share. Thereafter the market starts to rise, so at the end of the period (and beginning of the second) price per share is \$25, giving the 30 shares in the portfolio a value of \$750. Following the plan, however, another \$600 is "invested" in 24 shares of stock at \$25 per share, increasing holdings to 54 shares. The market continues to rise, so the 54 shares are worth \$1,620 at the end of the period, and we buy \$600 more at \$30 per share, getting only 20 shares for our money this time. Dollar averaging restrains any enthusiasm we may have acquired from heady experience with a booming market.

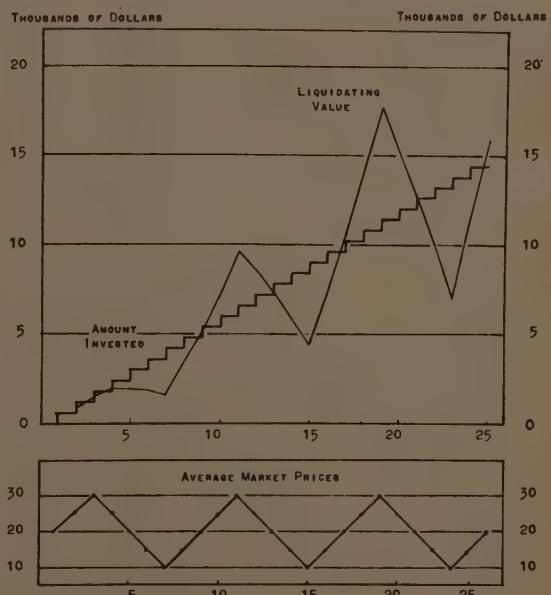
At this point the market turns down from its high—a development to test the stoutest heart—because at the end of the third period our 74 shares are worth only \$25

per share or a total of \$1,850, and we are ahead only \$50 despite the recent boom. But dollar averaging demands unwavering faith of its devotees, so another \$600 is tossed into the market at \$25 per share, adding 24 shares to the portfolio. Thereafter, prices decline even more, hitting a low of \$10 per share at the beginning of the seventh period, bringing a loss of almost \$2,000 on the \$3,600 invested in the six preceding periods.

Here is the crucial point. Assuming that the investor still has \$600 despite the depression, and the courage to invest it, he will get 60 shares for his money. Now comes the pay-off. The market starts up, hitting first \$15 per share and then \$20, the price at which the program was started. The dollar averager has laid out a total of \$4,800 in eight periods, for 268 shares of stock worth, at \$20 per share, \$5,360. His average price comes to \$17.91 per share, a saving of \$2.09 per share over the market average of \$20 (about enough to pay the Average Fund load).

Dollar averaging will always result in an average cost per share, less than the simple average of market prices, because it is a weighted average of prices in which weights are inversely proportional to prices, the higher prices receiving less weight than the lower. Dollar

Chart I
Dollar Averaging in Theory
Starting at Middle Price



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Table I

Period	Market Price per Share	Number of Shares Bought	Number of Shares Accumulated	Value at end of Period	Total Amount Invested
1	\$20	30	30	\$ 750	\$ 600
2	25	24	54	1,620	1,200
3	30	20	74	1,850	1,800
4	25	24	98	1,960	2,400
5	20	30	128	1,920	3,000
6	15	40	168	1,680	3,600
7	10	60	228	3,420	4,200
8	15	40	268	5,360	4,800
9	20				

Table II

Experience with Dollar Averaging Programs Started at Various Times

Year Started	Number of Shares Accumulated Through 1958*	Average Cost per Share*	Average of Market Prices	Amount Invested	Liquidating Value 1959 Prices*
1929	2,010	\$14.94	\$19.35	\$30,000	\$115,300
1939	1,183	16.90	22.05	20,000	67,900
1944	705	21.27	25.87	15,000	40,500
1949	370	27.03	31.26	10,000	21,200
1954	124	40.32	41.48	5,000	7,100

*Slide rule accuracy.

averaging may also be viewed as a harmonic mean of stock prices, and the formula can be written as a harmonic mean:

$$D.A. = \frac{ns}{\frac{s}{p_0} + \frac{s}{p_1} + \frac{s}{p_2} + \dots + \frac{s}{p_n}}$$

where s is the dollar sum periodically invested.

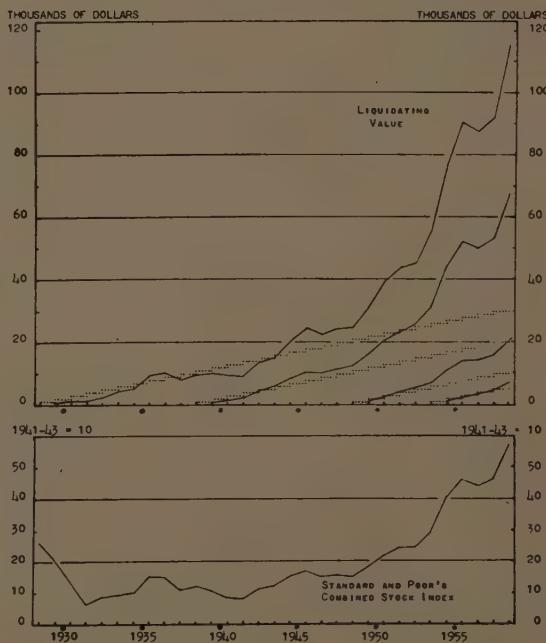
A harmonic mean of a series of values will always be smaller than a simple arithmetic average of the same series.

Although it is true that dollar averaging does accumulate stocks, at less than the average of market prices, it is not true that the program will lead inevitably to profit. Stock must be sold, or be saleable, above cost to bring success, and in a fluctuating market there will be times when the portfolio will show a capital loss.

Indeed, if a program is started at the bottom (instead of the middle) price and carried through a complete market cycle, the portfolio will be accumulated at a dollar average price less than the market average, but the liquidating price at the bottom of the cycle will bring a capital loss. Thus, with prices fluctuating between \$10 and \$30, with \$600 invested each period over eight periods, the program will accumulate 268 shares of stock at a cost of \$4,800 with a liquidating value of \$2,680. An investor has to know when to get out or dollar averaging may bring him loss instead of gain.

So much for *theory*. What could have been the *experience* of those who got into the stock market at various times during the past three decades? To answer this question, programs have been worked out for selected years, using annual commitments of \$1,000 and Standard and Poor's combined index of 500 stocks. A dollar averaging program started in 1929 when average

Chart II
Dollar Averaging Experience
Assuming Annual Commitments of \$1,000
at Average Prices



stock prices were \$26.02 per share (1941-43 = 10) and continued through 1958 would have accumulated 2,010 shares worth, at 1959 prices of \$57.38, approximately \$115,000. The \$30,000 put into the program has resulted in a (paper) profit of \$85,000. Dollar

Table III

Experience with Single Commitment Programs Undertaken at Various Times

Year Committed	Sum Committed	Price at Time of Commitment	Number of Shares Acquired*	Liquidating Value (at \$57.38)*	Dollar Averaging Results*
1929	\$30,000	\$26.02	1,153	\$66,200	\$115,300
1939	20,000	12.06	1,658	95,100	67,900
1944	15,000	12.47	1,203	69,000	40,500
1949	10,000	15.23	657	87,700	21,200
1954	5,000	29.69	168	9,650	7,100

*Slide rule accuracy.

average cost was \$14.94 and average of market prices over 30 years was \$19.35 per share, an advantage of \$4.41 per share for dollar averaging, or about \$8,800 on the 2,010 shares acquired.

Nor is success confined to a program started in 1929. Portfolios initiated in 1939, 1944, 1949 and 1954 also produced gains for the dollar averager. *Table II* and *Chart II* show the results of programs started in these years.

A skeptic may next ask, what would have been the consequence had each investor committed his entire capital to the market at the beginning instead of spreading his purchases over the years? This question has practical importance for the person suddenly in possession of a substantial sum of cash. The answer is found in *Table III*.

Except for the 1929 programs, plunging into the market has produced better results than dollar averaging, and hindsight suggests that anyone with money

should have committed it immediately to the stock market for maximum capital gains (as well as dividend income).

The systematic saver who can manage at best to accumulate only a certain amount each year has little choice but to dollar average, making a virtue of necessity, getting into the market as he can in the faith that a rising market will carry his accumulating portfolio to progressively higher values. Should the stock market falter, he may expect his dollar averaging program to yield losses, not gains.

In conclusion, dollar averaging has the merit of lower average cost for the systematic investor, and experience in the market suggests that it forces the investor to buy—even though he go behind—so that if the market goes up, the investor is with it, and has not missed his chance. The same outcome might be realized by following the uncritical motto of the 1920's: "Never sell America short!"

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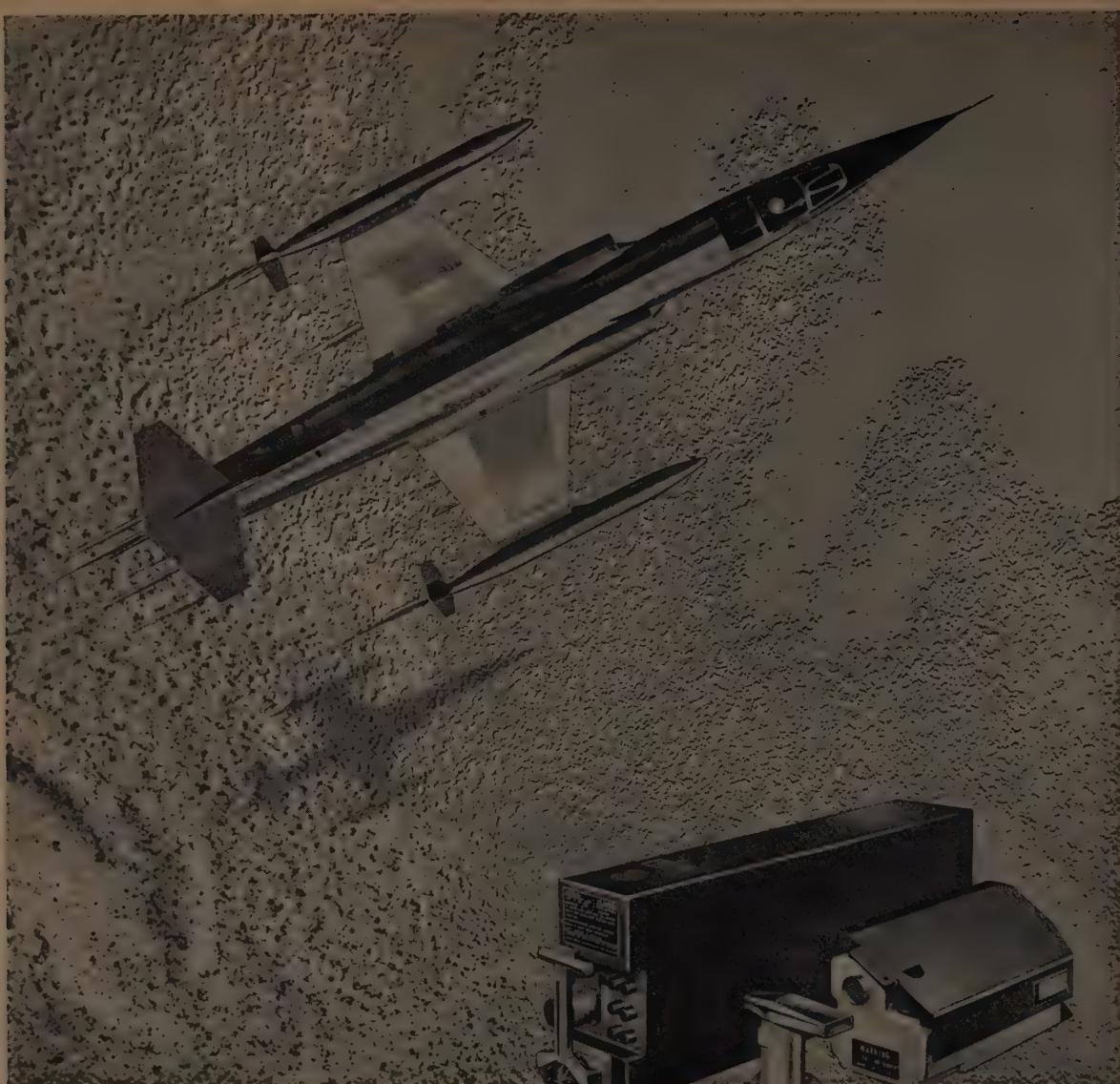
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American Telephone—

A Growth Stock?

by Norvin R. Greene

"In a period of continuously rising prices, such as we have been in for many years, the stockholders of a well-managed company should also be entitled to have their investment protected against the ravages of inflation . . . and not merely have their original dollar investment preserved."—John F. Lebor, vice president, *Federated Department Stores, Inc.*, before the *Harvard Graduate School of Business Administration* December 4, 1958.

AMERICAN TELEPHONE & TELEGRAPH COMPANY stockholders have not been protected against the ravages of inflation over the past 37 years. Obviously Telephone has not qualified as a growth stock over this period of time.

How is it that shares of some electric power generating companies have succeeded in achieving growth for their shareholders while Telephone has not? Telephone and electric power companies are public utilities and have many similarities. Why the difference in results for shareholders? And, has a radical change for the better now transformed Telephone into a growth stock.

Before listing four significant differences between American Telephone and electric power companies, here is a resume of investor experience in ownership of American Telephone shares.

From 1922 to 1959, a period of 37 years, Telephone paid the same \$9 per share dividend, neither more nor less in any year. But the dollar of today buys roughly 50% less than the dollar of 1922. In 1928, with his \$900 annual dividend on 100 shares of stock, an investor could buy a de luxe Chevrolet, and have a few dollars left over. In 1960, a Chevrolet costs about \$2,500, so the owner of 100 shares of Telephone can buy less than half a Chevrolet with his dividend. Even adding the recent 10% increase in dividend, the 100 shareholder has only \$990 with which to buy a \$2,500 automobile. And even a compact car comes to nearly \$2,000.

Sale of stockholder rights from time to time would have added something to the A. T. & T. owner's dividend income. However, it would have made up very little of the added cost of a new car.

Had the investor bought du Pont, IBM, General Electric, General Motors, McGraw-Hill, or Standard Oil (New Jersey), his increased dividend income would have much more than offset the deterioration in the purchasing power of the dollar, and these stocks are only a few of many which succeeded in protecting savings. Not only has the dividend income from these

other stocks risen, but a sale of the shares today will bring in vastly more capital than originally invested.

What factor, after 37 years of dismal, static performance, has permitted a 10% dividend increase by American Telephone? A financial officer of the company has stated privately that he believes it is due almost entirely to the belated, widespread recognition of persisting inflation by state regulatory commissions. But does this reluctant recognition of inflationary pressures forecast successively higher rates of return to keep pace with continued inflation? The answer from another Telephone official is "Doubtful."

Electric power companies are also up against state regulatory rate problems. But there are at least four important differences which permit fast-expanding electric power companies to increase per share earnings and dividends progressively.

(1) Of 1959 gross revenues of American Telephone, amounting to \$7 billion 392 million dollars, wages took 3 billion 61 million and fringe benefits took another 10.6% of payrolls. Thus, labor costs total nearly 46% of gross income.

These costs include labor cost for construction. If these are eliminated, payroll costs, plus benefits, were 37% of gross in 1959. This compares with 17.1% average for electric power companies in 1959.

Every wage increase on a national scale exerts pressure on the Telephone Company for rate increases more than 2½ times that felt by electric power companies.

Before installation of the dial system, AT&T employed 375,000 telephone operators. Despite the dial system installation, the number of operators has grown to more than twice that number. An AT&T officer has observed that, had the dial not been invented, there would not be enough woman-power available in America to handle telephone operator requirements.

(2) Every added telephone must be capable of connecting with every other telephone. Consequently, the more telephone subscribers there are, the greater the cost of equipment to connect each new subscriber with all others. (An electric power customer need only be connected with the central generating station).

(3) The rate of revenue growth from each telephone does not compare with that from each electric power user. Once the connection is made, the power customer can add electrical appliances almost without end, which means progressive income growth for the power company without a proportionate increase in capital investment.

(4) AT&T's policy is to limit funded debt to 35% of its capitalization. Its management takes the position that Telephone revenues are more vulnerable to recession or depression than are revenues of most electric power companies. Since Telephone uses preferred stock only in negligible amount, and that in its subsidiaries, 65% of its capitalization is common stock.

Electric power companies in contrast characteristically maintain 40% or less of their capitalization in equity or common stock. Senior securities make up

Norvin R. Greene, a partner with Lancaster & Norvin Greene, New York, is a graduate of Williams College. He is a well-known writer and lecturer on investments.

60% or more of the capital funds. Some companies maintain equity at 30% to 35% of capitalization.

The much larger senior capital of electric power companies provides their shareholders with greater leverage, giving them an important earnings advantage over Telephone company stockowners.

Since the 3-for-1 split, and the 10% dividend increase, some Financial Analysts have examined the possibility that American Telephone may plan a succession of splits and dividend increases. They point to mechanization in message transmission now in use and further mechanization in the future: long distance dialing and the coming use of microwave techniques; automation of accounting and billing; and widened use of modern computers as well. These Analysts argue that a greater portion of capital funds is now being provided from depreciation charges, requiring less equity dilution from sale of common shares or bonds convertible into stock.

During the post war period deferred telephone expansion, caused by the war, resulted in accelerated rate of plant and equipment investment for AT&T. This larger capital investment built up the rate base for allowed earnings and it also built a much greater cash generation from the increased depreciation on a larger investment.

If the rate of increase of capital investment now slows, will not also the rate of increase in rate-base slow down? It seems so. Western Electric and Bell Laboratories have not just suddenly been at work inventing equipment and systems to cut costs. This they have been doing successfully for decades. Probably their rate of progress is accelerating.

Most important to increase in Telephone Co. earnings per share will be the degree of success that is achieved in cutting the 37¢ paid to labor out of each \$1 of gross revenues. Perhaps the optimists here will prove correct. For encouragement they can point to the 1955-59 decline in labor costs from 45% to 37% of gross.

However, common sense suggests that it will be many years before Telephone can reduce labor costs to a level approaching the 17.1% of gross achieved by electric power companies.

The brilliant technicians of Western Electric and Bell Labs have come up with some truly marvelous developments in transmission of messages. However, it requires great imagination indeed to foresee a time when costs of service, relative to gross revenue, can approach the electric power company ratio. Electric power companies have a basic cost advantage in that they require no interconnection between its customers.

In conclusion, there seems to be reason for optimism about Telephone after a long 37 years of dreary performance. Perhaps the most important sign of better times is the published attitude of Fred Kappel, president. He is convinced, and he is trying to persuade others, that the companies which are able to achieve a good margin of profit, and growing earnings for shareholders, can best provide the public with the improved

products and services which make up our improving standard of living. This is the first time a Telephone president has widely publicized such ideas. If the public can eventually be convinced that no earnings-starved company can bring progress in the public's living standard, this would be a highly significant achievement.

Perhaps the greatest hope for gradually improving American Telephone earnings over the next few years lies in the possibility of a relatively stable price level for our economy.

Hope Lies in Curbed Inflation

In the past couple of years, the rate of inflation has slowed in the U. S. A trend toward greater price stability has developed in much of the Western World. Per Jacobsson, director of the International Monetary Fund, points to the greatly enlarged production capacities of the free world and to a disillusionment with inflation. He is hopeful that world inflation will remain curbed for the foreseeable future.

The disposition of state rate regulatory bodies appears to be to permit Telephone company subsidiaries to retain earnings created by cost reductions. This attitude has allowed the return on American Telephone rate base to rise to 7½%. In rate case proceedings, a 6% to 6½¢ has characteristically been the allowed ceiling of return on rate base. In all probability a 7½% or higher return on rate base will be possible only so long as application for rate increases are not needed to maintain such return.

State utility commissions are unlikely to grant increases until rate of return drops below the 6% to 6½% level. Thus, when price levels once again resume their upward trend, the current 7½% rate of return will not be possible.

Some Utility Analysts had forecast a rise in the Telephone dividend early in 1960. They, and purchasers of Telephone stock at rising prices, were disappointed when, at the annual meeting, President Kappel made it clear that the company would be slow in raising dividend payments.

Management's reluctance to raise dividends, as earnings increase, may be better understood if it is appreciated that raising dividends to a level dependent on a 7½% return could later force a cut, when a rising price level is resumed.

The dividend record of American Telephone can boast of only one increase, and that only 10%, in 38 years. But during that long period of years, there has been no dividend cut. It is understandable if management does not wish to mar that record.

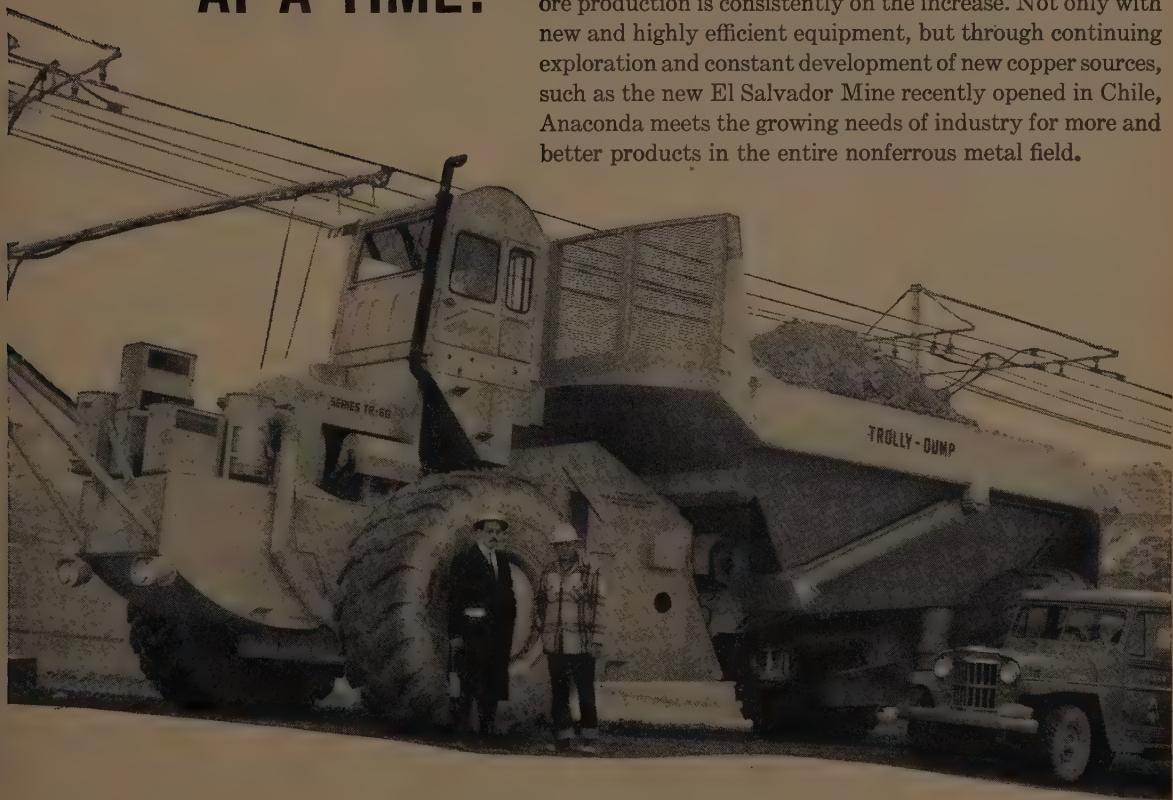
Defensive investor psychology may justify some of the recent popularity of American Telephone stock. Perhaps one component of its current price is the belief that it has been transformed into a growth utility stock. If so, this component of price may prove not to have rested on firm ground.

(Editor's note: In our next issue, Charles Tatham, Baché & Co., will present another aspect of American Telephone & Telegraph Co.).

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A far cry from the miner's mule of the '80s, this new mammoth ore truck performs Herculean tasks in Anaconda's Berkeley Pit at Butte, Montana. Still in the experimental stage, the gigantic vehicle hauls ore up-grade out of the pit, 75 or more tons at a time. Designed to replace Diesel trucks with less than half the capacity, it operates electrically on special trolley wires and each of its four oversized wheels can deliver 400 horsepower, a total of 1600 horsepower—making it the most powerful truck in the world. Without a load, it can leave its trolley wires and operate on 350 horsepower supplied by its own Diesel generator.

Huge as it is, Anaconda's new truck is in proportion with the vast Butte operation. One of the richest mineral areas ever discovered, Butte has supplied industry with more than *three billion dollars in mineral wealth*. Up to 1959, more than 7 million tons of copper had been mined at "the richest hill on earth"—which has also been a bountiful source of zinc, manganese, lead, silver and gold.

Current production at Butte continues to set king-sized standards, and the new king-sized ore truck is part of a system which moves more than 28,000 tons of ore a day at the Berkeley Pit. This is just one reason why the Company's ore production is consistently on the increase. Not only with new and highly efficient equipment, but through continuing exploration and constant development of new copper sources, such as the new El Salvador Mine recently opened in Chile, Anaconda meets the growing needs of industry for more and better products in the entire nonferrous metal field.

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Pre-Determined Resistance Levels for The Dow-Jones Industrial Average

by Marc de Goumois

THE DOW-JONES INDUSTRIAL AVERAGE (DJI, for short) has distinctive advantages over all other stock market indexes that are published. It goes back to 1897. It is not reconstructed; on the contrary, it is a day-by-day and year-by-year image of the New York Stock Exchange with all its minor and major swings. It is watched hourly by practically the entire investing community. And, finally, complete data on its long past history are available.

It is no wonder, therefore, that the DJI has been for years a fertile field of research by those who, like the writer, believe that much can be learned from its past behavior.

The research work on the DJI, which is outlined here for the first time, pertains to those temporary trend deviations—upward or downward—which don't look, in retrospect, as very significant because they were soon rectified and did not disturb the then existing major trends. It was believed that by carefully spotting and measuring each of these temporary trend deviations, some characteristic limit common to most of them might be detected. If such were the case, then the trend deviations exceeding this characteristic limit would have to be watched carefully because they would be the ones most likely to mark the starts of new major trends.

The writer knew what he was looking for because the DJI is, after all, an average of stocks and what applies to individual stocks should also apply to the DJI. And he has done a great deal of work on individual stocks for the purpose of find-

ing out if there existed a uniform way to determine when a trend deviation—upward or downward—should stop if it were to remain within normal bounds and not degenerate into a major trend change.

This work on individual stock was first undertaken several years ago to try to implement the following concepts which are fine if one knows when a trend deviation becomes significant:

1. Once a trend is established, it is likely to continue for some time.
2. Stocks should be purchased on the way up, i.e., when they have staged significant rebounds from their previous major downtrend patterns.
3. Stocks so purchased should be held so long as their uptrend patterns have not been impaired in a significant manner.
4. But when stocks show up-trend pattern deviations which have become significant, they should be sold.

This work on individual stocks has been most rewarding because it was discovered, as a result of thousands of samplings, that when the coordinates of certain salient facts, applicable to all charts of listed stocks, are assembled in the desired manner, a well defined and perfectly straight line seems to separate, in a given set of samplings, those trend deviations which were temporary from those which turned out to mark the start of new major trends.

There are two sets of samplings applicable to individual stocks. One pertains to deviations from uptrend lines, and the other to deviations from downtrend lines.

The dividing line applicable to each set of samplings is both a proof of the soundness of the approach used and a graphic representation of the formulas evolved from these

samplings to compute resistance levels in advance. It is felt that the good results obtained thus far generally implement the above mentioned concepts.

These pre-determined resistance levels could also be designated as automatic "cut-off" and "get-in" points calling for appropriate action as soon as they are breached. In other words, one should buy when there is an upward penetration of a pre-computed overhead resistance level, and one should sell when a similarly pre-computed underlying resistance is violated.

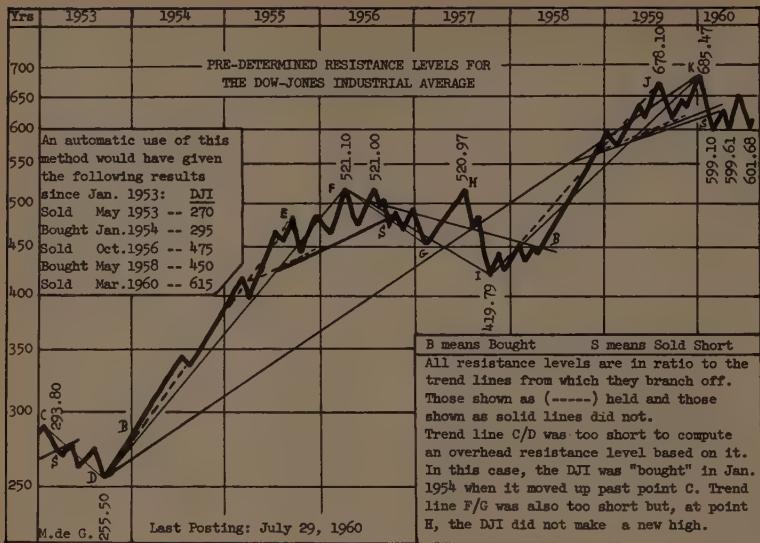
How Trend Lines Apply

The basic method being thus known and already in extensive use for individual stocks, it was a relatively simple matter to adapt it to the DJI. In this case, the determination of typical resistance levels has been based upon the evaluation of all DJI trend deviations of more than 5% which stopped before they reached "points of no return," marking the starts of new major trends. These were easily spotted on charts reconstructed all the way back to 1897.

The common denominator of all DJI's resistance levels which "did resist" is the relationship between the lengths and slopes of major trend lines and the points where slanted resistance levels branch off these major trend lines. The slanted resistance levels always branch off the applicable trend lines at angles which equal 50% of the slopes of the major trend lines. For instance, if the angle of a major trend line is 70°, the slope of the resistance level branching off will be 35°. This 50% ratio would have to be changed somewhat if a different type of chart paper were used. The one on which this work on the DJI has been done is of the semi-logarithmic type with one cycle per 10 vertical inches and 12 months per lateral inch.

The relationship between trend lines and related resistance levels is so consistent that all true underlying resistance levels of the DJI since 1935 are on one straight line on the writer's calculating chart. And nearly all true underlying resistance

Marc de Goumois, associated with Cohen, Simonson & Co. (members of the New York Stock Exchange), is a long-time student of the technical side of the New York stock market. His previous contribution to this publication was in February 1957.



levels, noted between 1897 and the end of 1934, are on another straight line.

The existence of these two straight lines shows that intermediate reactions prior to 1935 had a tendency to be somewhat more pronounced than those after 1934. And the reason might be the less stringent trading rules which existed before the advent of the Securities Exchange Commission, especially regarding short sales.

Some of the points on those two straight lines pertain to resistance levels computed in ratio to uptrend lines beginning years apart but which culminate in the same top. The reason for these remarkable alignments is that a long uptrend line, moving up at a relatively small angle, and a shorter uptrend line moving up at a sharper angle, have a tendency to compensate each other so far as their respective resistance levels are concerned. For instance, on the chart accompanying this study, the underlying resistance level in ratio to the long uptrend line D/K (from September 1953 to January 1960) is very near the resistance level belonging to the trend line I/K (from November 1957 to January 1960). As a matter of fact, the small distance between two resistance levels in one set might be considered the permissible leeway.

Overhead resistance levels, i.e.

those involving rebounds from major downtrend lines, are subject and generally respond to the same rules as those applicable to underlying resistance levels. But they have their own and slightly different formulas—one pre-1935 and one post-1935.

Once a pre-determined underlying or overhead resistance level is penetrated, it is assumed that a new major trend is in effect. This assumption has been correct for the great majority of resistance level penetrations since 1897, but there are, of course, some exceptions. One was the downward penetration noted in May 1953. The subsequent further decline by the DJI was rather inconsequential and the downtrend line C/D on the accompanying chart was too short to compute an overhead resistance level in ratio to it. In this case, the DJI was "bought back" in January 1954, i.e. when it finally moved up above point C.

As a general rule, trend lines—upward or downward—which are less than 1.1 inches long can't be used to compute resistance levels. One must then wait for a longer trend line or, if that does not happen, one must watch for either a new high or a new low for the move, as the case may be, before reversing the previous market position.

Inasmuch as all regular resistance levels are slanted, this means that a time factor is incorporated in them.

If, for instance, the DJI were to make a significant new high, and then move sideways for more than a year, the applicable underlying resistance level could very well catch up with the stalled DJI and give a sell signal because its steady upward slant would have moved up past the DJI. And, reversely, a descending overhead resistance level might eventually catch up with a DJI making a long drawn out bottom.

The resistance levels shown on the accompanying chart, as well as those on the charts covering the period from 1897 to the end of 1952, are on a reconstructed basis up to the top of August 1959. But all were computed according to well defined rules. They should have, therefore, as much validity as if they had been computed when the applicable swings of the DJI took place.

A theoretical retrospective check of the pre-computed resistance levels, that were penetrated to give either buy or sell signals, shows that an investor using this method since 1897 would have been long of stocks during the much greater parts of all bull markets and he would have been out of the market—or short—during the worst parts of nearly all bear markets. In terms of the DJI, there would be to March 1960 some 1,400 points gained and some 200 points lost, with no single loss exceeding 30 points.

This method is of special interest at this time because the DJI has clearly moved down (early last March) below the underlying resistance levels in ratio to uptrend lines D/K and I/K of the accompanying chart.

It should be emphasized that all resistance levels can be computed in advance. For instance, those related to the recent top of January 1960 were computed as soon as it became apparent that, temporarily or otherwise, that was a high point. All that was needed was a knowledge of the lengths and slopes of the uptrend lines D/K and I/K.

This method only takes into consideration the closing figures of the DJI; intra-day highs or lows are ignored.

Newport News Shipbuilding and Dry Dock Company

Profit and Loss Information for the six fiscal months ended June 27, 1960 and June 29, 1959

	Six Fiscal Months Ended	
	June 27, 1960	June 29, 1959
Gross income from shipbuilding, ship conversions and repairs, hydraulic turbines and other work	\$90,453,334	\$98,645,765
Operating profit	\$11,552,755	\$11,630,690
Deduct—Provision for taxes on income	6,500,000	6,300,000
Net profit before allowances	\$ 5,052,755	\$ 5,330,690
Deduct—Increase in allowances on long-term contracts . .	550,000	600,000
Net profit—Amount	\$ 4,502,755	\$ 4,730,690
Net profit—Per share outstanding at the close of the period	<u>\$2.79</u>	<u>\$2.93</u>

The above information is based in large part upon estimates and is subject to year-end audit, adjustments and charges and is not necessarily indicative of the full year's results. The underlying contract estimates as at June 29, 1959 have since been revised, and those as at June 27, 1960 will be revised hereafter.

The Company records profits on its long-term shipbuilding contracts through estimates on the percentage-of-completion basis, and on its other long-term contracts as billings are made thereon. The profits so estimated and recorded are subject to the provision of such allowances as may be considered advisable, taking into account the stage of completion of each contract, possible increases in costs not included in the estimates, guarantee liabilities, unsettled contract adjustments and other factors. The amounts reserved as allowances reflect the reductions in Federal and state income taxes which would result if the matters covered by the allowances materialize. The performance of such contracts may extend over periods as long as several years, and revisions in the contract estimates and allowance requirements during performance and upon final contract settlements have the effect of including in subsequent accounting periods adjustments necessary to reflect the results indicated by the revised estimates and allowances. Such allowances aggregated \$3,050,000 at June 27, 1960, \$5,825,000 at December 31, 1959 (of which \$3,325,000 was applied as a direct contract adjustment in June, 1960), \$4,175,000 at June 29, 1959 and \$3,575,000 at December 31, 1958.

A substantial part of the Company's business is with departments and agencies of the United States and the contracts therefor may be subject to profit limitations, renegotiation, and to termination at the convenience of the Government.

Quarterly Statement of Billings, Estimated Unbilled Balance of Major Contracts and Number of Employees

	Six Fiscal Months Ended	
	June 27, 1960	June 29, 1959
Billings during the period from shipbuilding, ship conversions and repairs, hydraulic turbines and other work	\$ 98,083,950	\$103,562,571
Estimated balance of major contracts unbilled at the close of the period	\$255,718,802	\$259,314,870
Equivalent number of employees, on a 40-hour basis, working during the last week of the period	16,762	13,155

On July 22, 1960 the Company executed a contract with the Department of the Navy for the construction of a Polaris submarine at a ceiling price of \$32,405,000, and on July 13, 1960, the Company submitted an apparent low bid approximating \$50,000,000 for the construction of 5 cargo ships for the United States Lines Company.

The Company reports income from long-term shipbuilding contracts on the percentage-of-completion basis; such income for any period will therefore vary from the billings on the contracts.

By Order of the Board of Directors

R. I. FLETCHER, Financial Vice President

July 27, 1960

REPORT FROM

WESTERN UNION

NEW COAST-TO-COAST MICROWAVE BEAM SYSTEM SCHEDULED FOR COMPLETION IN 1961

WESTERN UNION TOTAL CAPACITY TO BE INCREASED BY NETWORK
ENGINEERED TO HANDLE EVERY KNOWN FORM OF ELECTRONIC COMMUNICATION



WHEN Western Union's new coast-to-coast microwave beam system is completed in 1961, additional capacity—equivalent to 2,400,000 words per minute—will augment Western Union's current system.

THIS microwave network has a potential of more than 50,000,000 miles of two-way telegraph channels! And, because snow and ice can't snap a microwave beam, maintenance is reduced to a minimum . . . with vast improvements in stability and accuracy of transmission.

FLEXIBILITY? This network creates new broadband facilities to provide high-speed transmission of data, alternate record-voice, facsimile, telegraph, digitalized TV and other communications services. *Example:* this system will meet broadband data processing needs of the U. S. Air Force.

FIRST section of the microwave network—along the West Coast—is scheduled to swing into operation next October. Sites for twin-mast microwave towers—spaced 25 to 30 miles apart—have been selected and construction contracts are being let. Completion of this coast-to-coast system is expected by the end of 1961.

THIS NEW microwave system and a companion project—Western Union's new transistorized, high-speed digital data system for the U. S. Air Force—represent gross capital expenditures of approximately \$80,000,000 . . . a confident investment in the tremendous future of Western Union.

WESTERN UNION FINDS BETTER WAYS TO SPEED IT ELECTRONICALLY

Strategic Air Command Takes to the RAILS

With the Mach 3 Age upon us, there appears to be a notion, as jets stream and scream across the skies, and as airports are often more closely jammed with passengers than railway stations, that the days of railroading should be relegated to a niche somewhat akin to the horse-and-buggy.

And, unconsciously—in some cases—our ever-expanding media of flash communications tends to aid and abet (and sometimes comfort) this anachronistic-type of thinking. Nothing could be further from the truth. For while everyone realizes that wings over the clouds will become ever more commonplace, the need for steel wheels, grounded on rails, is of equal importance.

And who would have thought (just a few months ago) that our sky-blue-yonder airmen would bow—of all things and be proud of it—to the “old-fashioned” slow-moving trains! But, it’s come to pass; and the marvelous interlacing of the Strategic Air Command’s defense activities with the century-old railroads, is another means of putting us in instant contact with SAC bases around the world.

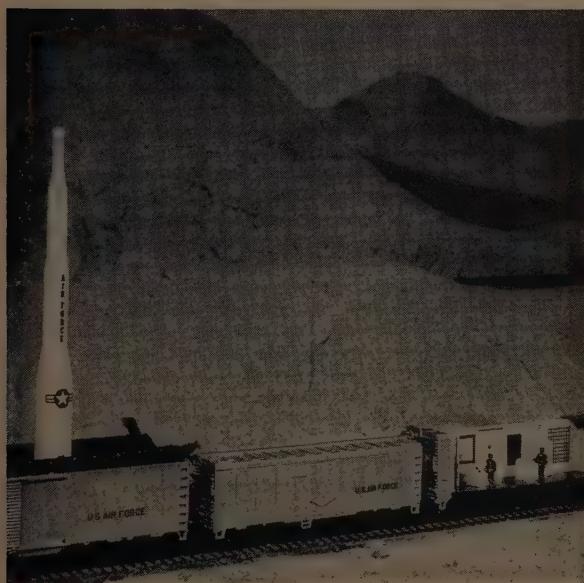
As the Air Force Ballistic Missile Division moved ahead to develop the mobile deployment concept, the first mobile Minuteman *test* train rolled on to the nation’s vast rail network. It was mid-summer and from the Air Force base at Ogden, Utah.

The Air Force Ballistic Missile Division is the executive manager of the Minuteman weapon system development program, as well as for the Air Force Thor, Atlas and Titan.

The development of mobile railroad train concept will continue to parallel the flight test program expected to get underway at Cape Canaveral before the end of 1960. Program schedules call for the first *regular* SAC mobile train to become operational in a matter of months after the first missiles for hardened and dispersed deployment are available.

And in view of this highly interesting and extremely vital team-work between the Air Force and the rails—a development which would seem to presage the expanding horizon of our country’s defense—the expansion and development of rails in other fields is of equal importance. And to high-light this importance, the following two articles deal with the subjects in quite some detail.

So, with the Strategic Air Command taking to the rails, the rails also are taking to broader vistas.



MOBILE LAUNCHING PAD

Somewhere on a pre-surveyed siding, along its assigned segment of the U.S. rail network, a mobile Minuteman, left, is ready to be launched. In the communications car, the train commander awaits word (from only one man: the President



of the United States) to send this Inter-Continental Ballistic Missile, and its nuclear payload, more than a quarter of the way around the world—toward an aggressor’s homeland. In the control room, right, is the mobile nerve center aboard a SAC Minuteman train. The latter’s every move, during extended rail deployments, is coordinated with command headquarters.



Tin plate: another area of growth at

NATIONAL STEEL

Tin plate is a product that combines stability with growth. The economic barometer may read high or low, but people still eat. So the demand for tin cans is relatively stable. Furthermore, growth in demand regularly exceeds population growth because of the steady rise in per capita use of canned foods . . . and because of the many, many non-food products—old and new—that are increasingly packaged in tin plate.

Tin plate has long been a key product of National Steel. It is the product on which the business of our Weirton Steel division was built at its start 55 years ago. It is still

the most important product in Weirton's now varied line.

We have pioneered improvements in tin plate; have steadily increased tin plate capacity; have become one of the world's largest tin plate producers.

Now we are taking a long step to even further growth. As part of our \$300,000,000 corporation-wide expansion program, we are building an entirely new steel finishing plant in the Chicago area to be operated by our Midwest Steel division. It will be completed in the second quarter of 1961. Here again, tin plate will be a major product

from this new source of supply in the heart of fast-growing mid-America.

Other parts of this great expansion program are underway at our Great Lakes Steel Corporation in Detroit and at our Weirton Steel division at Weirton, West Virginia. The program's objectives: to supply our customers with the last word in quality and service . . . to win still more of that happy combination of stability with growth.

This STEELMARK of the American steel industry tells you a product is steel-made, steel-modern and steel-strong. Look for it when you buy.



NATIONAL STEEL CORPORATION, GRANT BUILDING, PITTSBURGH, PA. Major divisions: Great Lakes Steel Corporation • Weirton Steel Company
Midwest Steel Corporation • Stran-Steel Corporation • Enamelstrip Corporation • The Hanna Furnace Corporation • National Steel Products Company

Self-Running Trains Now A Practicality

Economic Advantages Seen Over Other Forms of Transportation

by John W. Hansen

MOST OBSERVERS OF THE RAILWAY SCENE agree that relief of the railroads from their present economic plight could only be partially achieved by adoption of a more equitable public policy between competing forms of transport. Even under the most favorable treatment, the railroads must continue to strive for technological progress and increased efficiency if they expect to keep pace with competing forms of transport and general industrial progress.

More intensive application of automatic systems and devices already of proven ability in railroad operation will do much toward solving the railroad problem. However, it is not too early to give serious thought to a wider concept of operation—the completely automatic railroad. Keeping this concept continuously before us provides a guide for the direction of development programs.

Systems already in use and those yet to be perfected in the interim stages of progress toward the automatic railroad could make important contributions to more efficient and economical use of railroad plants. C.T.C., mechanization of classification yards, and other signal systems still have a vast, unrealized potential.

The idea of the fully automatic railroad has reached the stage of acceptance by many, and the subject is no longer considered a fantastic creation of a few mildly confused visionaries. Preliminary steps toward achievement have been taken on several fronts.

We all know the tremendous economic problems faced by the railroad industry today and we are also aware of what the industry must do to continue its existence.

1. Operating costs must be lowered.
2. The industry must continue to improve and expand services offered its customers.
3. It must sell its product (low-cost transportation) more effectively in an increasingly competitive market.

Thinking and acting toward the achievement of the automatic railroad, which promises tremendous potential returns, can contribute a great deal toward achieving these basic economic objectives.

This report will be largely devoted to an explanation of the relationship of the present day railway signaling

John W. Hansen, manager of sales promotion and advertising for Union Switch & Signal (Division of Westinghouse Air Brake Co.), is a graduate of Virginia Polytechnic Institute, and for years worked at his profession as an engineer for this organization. Currently he is also chairman of the Railway Club of Pittsburgh, and secretary of the Pittsburgh chapter of the Association of Industrial Advertisers.

and communication art as a part of a completely automatic railway system.

Actually, the concept of an automatic train is not new. We have been working toward it for many years. Practically all of us are familiar with a very good example of one type of automatic railroad system. A great many persons have worked on this very famous line since it's one of the biggest railway systems in the world. In fact, nearly every family in the United States has invested money in its capital equipment at one time or another. I'm referring to model railroads, which in many cases represent other substantial outlays of "hobby" capital and very elaborate control systems.

The example of the model railroad is not a completely accurate one. Most model railroads operate by remote control and require the human mind to make many of the simple routine decisions incidental to operation of the trains. In a completely automatic full-scale railway system, the train itself would be the absolute slave of a control system needing only monitoring for the occasional situation when human judgment is necessary.

As a prerequisite to clear thinking on the subject of automatic railroads, we need to look at the background of accomplishments which can be incorporated into the system. Using these as a base, we can start to build on them. However, because the development of electronic and automatic equipment is progressing so rapidly, we can use the past only as a guide to what we have to do in the future. It is obvious that any automatic system must be based on application of the "fail-safe" principles developed in American Railway signaling, particularly those of automatic train and speed control systems, which will function independently of "Stop-Go" controls governing locomotive propulsion energy.

R.R. Signaling vs. Other Industries

As an example of how our present signaling technology shapes up against that of others, let's consider the telephone industry. In use today are facilities providing automatic switching systems that can connect one party to another. In some places, direct-dial service is possible all the way across the country. For the most part, calls are recorded automatically. Each call is sorted automatically and assigned the proper base rate for compiling the customer's monthly statement. This equipment searches for an unused message channel, stores information permanently or temporarily, and provides complete accounting and tabulating facilities.

Many of these operations are very similar to those which are now, for the most part, manually performed on our railroads. Let's take another example. The

automatic movement of building elevators has been so perfected that attendants are no longer necessary. Elevators transport people. Therefore, they must be designed and operated under strict safety regulations. Now, if we consider the elevator as operating horizontally, it's easy to see that this is basically similar to the type of control which we need for our trains.

Now, how does railway signaling technology compare with that of other industries? Actually, railroads can claim the status of pioneers in the use of automatic devices. Signals and devices have been added along the wayside to protect against faulty human decisions which could lead to accidents. These units perform precise duties which have been assigned to them, and they perform them automatically. Large existing installations, and continually increasing C.T.C. mileage is demonstrating that the operation of switches and signals and route selection may be made safely over great intervening distances. Also, that information regarding the positions of the switches and signals and the locations of trains may be transmitted automatically to a central control point. Further automatic features will become a part of our existing signal systems as their advantages become more readily recognized. Railway signaling is not a static industry, but one where steady forward progress in technology is incorporated in new installations regularly as a matter of course.

Another example is automatic highway crossing protection. Here is another safety device which has assigned to it specific duties that are performed automatically. But these devices are only a small part of the total contribution of signaling to better railroading. More complicated equipment has been perfected to perform a wide range of functions in the protection and government of train movements—all on the "fail-safe" basis.

There are automatic route selection interlocking systems where the best available route through a maze of switches can be established just by pushing two buttons. The automatic interlocking system is also a familiar example of automatic protective equipment with capabilities of controlling both very simple and quite elaborate track arrangements.

There is the automatic cab signals and speed control equipment used extensively on the Pennsylvania and Long Island Railroads which automatically controls and limits train speed to requirements as determined by traffic conditions in advance. If a train exceeds these limits, the control system brings on a full-service brake application to either stop the train or reduce its speed to the predetermined rate. Through the use of coded track circuits, multiple speed control limits can be established. Here, again, the principles of automatic control are already in use.

'Identify on the Run'

One of the most completely automatic operations presently in use is automatic train identification equipment to provide trains with individual "character" which permits them to register their identity and location . . .

instantly and automatically . . . as they pass selected identification points, regardless of train speed. This specific identity registration can be used with other available equipment to provide automatic route line-up, automatic announcing systems, check-in check-out at terminals, and in many other different ways to promote more efficient, more automatic train operation.

Automatic train dispatching equipment has been used in rapid transit systems for almost 20 years. This was one of the first practical applications of an automatic system for directing train movements. Here again the dispatching functions are supplemented by signal and train control systems which preserve the basic requirement of positive automatic protection.

The automatic classification yard is probably the most complex of any railroad control system developed to date. These installations have been in operation long enough to have proved themselves as a practical and economical means for vastly improving transit time of freight traffic. The development of these yards has also helped immeasurably in the research work that is needed to design and build the automatic railroad of the future.

All of these devices have been accepted by our industry because they have proved their reliability by in-service performance. Each one of them minimizes human failures and each one of them contains elements which can make decisions automatically. It's easy to see that the present state of railway signaling technology compares quite favorably with other industries.

Design of Rolling Stock

Now, there's something that should be cleared up at this point. What kind of a rolling stock are we contemplating for this automatic train? Are we talking about a dream train that is really "blue sky" stuff? This sort of thing may fit more easily in a science-fiction tale, but it's not what we're talking about. A dream train is not compatible with the practicalities and economics of the railroad industry. The possible advances in automation we are talking about are based on the continued use of existing equipment to the highest degree possible. Today's trains are the basis of our present planning. The present physical make-up of our railroad system can accept the concept of automatic trains which we are talking about.

The Plymouth Locomotive Works of Plymouth, Ohio, a manufacturer of industrial switching locomotives, has ordered remote control equipment to be installed on a conventional type locomotive, for in-plant demonstrations to customers of the practicability of operating industrial switching locomotives without an operating crew. This equipment, which will make remote controlled operation possible, will be offered by the Plymouth Works as an optional feature to buyers of industrial switching locomotives. With it, an operator can, by push button manipulation, release brakes, start the locomotive and control its speed, apply brakes, stop the locomotive, and stop the engine. In addition, provision is made for reversing the running direction, sanding, ringing a bell and blowing a whistle.

An order was recently placed by a steel company for equipment to remotely control a pusher locomotive to deliver loaded ore cars to a rotary dumper. With this equipment, all control functions required in this type of operation will be initiated from a remotely located panel by an operator using miniature levers. Control of the locomotive will be sufficiently precise to enable the locomotive to "spot" cars exactly on the dumper.

A set of equipment for the remote control of a switcher locomotive operating over approximately 15 miles of in-plant trackage is also in production. Control of the movement of the locomotive will be from a remote portable radio transmitter, carried by an operator who can be as far as 400 feet from the locomotive. Seven speeds, forward or backward, power on and off, brakes on and off, sanding, bell-ringing and whistle blowing will be provided for this operation. These three examples are all translations of model railroad operating principles to full scale practical operation.

In addition, tests are presently under way in New York for the operation of completely automatic trains. In this operation, an automatic programmer directs the starting of the train. Automatic equipment controls its acceleration, its normal running speed, and a planned deceleration to stop at the station. Basic to this contemplated operation is the double-check feature which will guarantee control of train movement through a track circuit-controlled signal and train control system.

Automation on the West Coast

Presently under consideration by the San Francisco Bay Area Rapid Transit District are plans to erect an automatic passenger transportation system. This installation would employ all known automatic systems now in use, in part, on many railroads, into one integrated system of control where movements of trains will be automatically directed and controlled during normal operation but subject to certain override controls by a train attendant under the direction of a Chief Dispatcher.

In addition to automatic systems now in use will be a station programming system which will check train position at platforms, open doors for passenger unloading and loading, close doors, and start the train—all automatically. Plans for the installation of the first stage of this system will involve a total of at least 600 rapid transit cars. A vital feature of this system would be the use of an automatic block signal system which places the train under direct control of the signal system itself, without the need of wayside signals or an operator to interpret them.

A report from the other side of the world reveals that Russian railroads have completed a series of successful tests with analog computer-type equipment to provide automatic control of a moving train. This equipment is designed to provide completely automatic control of a locomotive on a given track and according to a given time-table. This equipment limits the action of the engine "driver" to simple ON and OFF operations of the automatic equipment during stops in the stations; he takes full control of the engine only in an emergency.

Prototypes of this system have been in operation on selected sections of Russian railways for several years, and are reported to be very satisfactory. It is interesting to note that, where we in this country primarily design and develop equipment to provide the required safety with a minimum of manpower requirements, the Russian's primary objective is for more efficient operation. Manpower is abundant and not even a consideration.

According to Russian railway officials, this new equipment operates the train with greater precision and economy than even the most experienced "driver." Statistics of this type of operation have shown substantial savings in power consumption and in increase of traffic capacity. This is just additional proof that full automation of train operation is practical and desirable. Perhaps we should recognize more fully that automatic railway operation can offer us much more than manpower reduction and that the Russian point of view at least deserves consideration in our thinking.

The previous examples show that we're already making significant headway toward our objectives. In every case, the major units of control equipment have been developed, tried and tested on the railroads under actual service conditions for a number of years. Experience has made for some modifications and some new developments, all based on basic, elementary, time-tested equipment.

From Simple to Complex

Going from the simple to the more complex is not new in any field. Automatic crossing protection provides the best example of this progression from the simple to the complex. Let's consider some of the first types of automatic highway grade crossing protection equipment. As new ideas took effect and new applications were conceived, the crossing equipment took on increased complexity. Right now we are installing automatic highway crossing protection that would have been thought impossible only 10 short years ago—and this same situation applies to our concept of an automatic railroad. That means that the automatic devices we have been talking about can be combined with today's technology to provide us with a more completely controlled signaling and automatic train movement system.

New Terminology Needed

Now, in order to discuss large scale automation programs, we need some new terms in our present railway signaling language. First, let's suppose that along our automatic railroad the decisions that control train movements will be made by automatic equipment called "decision-making devices." These are the devices which are capable of sizing up the normal everyday traffic problems. They automatically make the proper decision to direct the best possible movement of each train—again subject to the basic safety controls.

Next we have an automatically piloted train which is controlled in accordance with specific commands. These commands are determined and initiated by the *decision-making devices*. We can call this an *automatic train*.

An automatic *train control servo* is the mechanism on this automatic train which follows the commands for specific controlled conditions as dictated by the *decision-making devices*.

These new terms in railroad signaling — *decision-making devices*, *automatic train*, and *train control servo* — all define operations now being handled by men.

Now, here's why the railroads fit our concept of automatic operation so well, and why no other transportation system can meet the fundamental requirements so conveniently: The railroads have a series of precisely defined rights-of-way over which train movements are directed; these comprise an exclusive lane for train traffic. They are under the direct control of the railroad organization. They follow a geographical pattern where speed limits can be established, switching locations defined and traffic patterns scheduled. Because of these facts, the job of providing complete automation is not only feasible, but entirely practical with today's technology. Because of the exclusive control of private property, on which its trains operate, railroads have a tremendous economic advantage over all other forms of transportation when automation is being considered.

Now that we have decided we can have automatic railroads, how do we go about getting them in the minimum amount of time? Well, we must first consider a series of logical steps, each one of which must stand on its own as an economical investment.

Four Steps to Automatic Control

Our concept of the development of automatic railroads falls into four major steps. *Step Number 1*—Continue the extension of remote control from one centralized point (this is commonly referred to as CTC). Remote control allows direction of train movements with a minimum of manpower. *Step Number 2*—Add cab signal and train control equipment to provide safety of train operation without the need of wayside signals. *Step Number 3*—The decision-making devices for automatically directing train movements would be installed along the wayside. This equipment would remove many routine decision-making operations from the dispatcher. *Step Number 4*—Addition of the automatic train control servo. This would require the expansion of decision-making devices along the wayside to provide the precise commands that would automatically operate the train.

Automatic operation, as suggested in *Steps Number 1, 2 and 3*, can be incorporated in a small or large section anytime with immediate returns in greater operating efficiency. It need not be a continuous program. In advancing to *Step Number 4*, it is probable that the less complex areas would be selected first. More complicated areas would then be automated following our plan of going from the simple to the complex. Going from the simple to the complex would reduce the dispatcher's duties enough to allow him to learn the technique of monitoring automatic train movements. Once this technique is mastered on a small scale, larger installations would not require too much additional dispatcher training.

What are some of the problems to be solved in progressing towards the automatic railroad?

Among these are the problems of handling on-track work equipment, local trains, set out operations by through trains, the taking up of slack, and others. These problems will have an influence on the complexity of the decision-making devices that will be needed. Although they are not the biggest problems in the world, they will require time and study. Now, how will these decision-making devices help? Let's consider what can happen.

Today's dispatcher now spends a large percentage of his time in telephone communications. This is to supplement the limited scope of his signaling and control system. These telephone calls concern requests for a train movement which is other than that described by time table or any prearranged traffic plan. In the automatic system, these time-consuming calls will not go to the dispatcher. They will come in and go out as a coded request made to the traffic control system. These requests will be answered by a signal or an indication which will automatically give authority to proceed as soon as traffic conditions permit. Use of voice communication facilities would be limited to other than routine requests.

New Method to Record Trains

Today's dispatcher spends a great deal of time with clerical duties. This is because he must maintain a continuous station-by-station record of the movement of trains in his control area on hand written records and notations on the train graph. When the train enters his control area, he must record its number. He is then required to trace its progress through his area by connecting each indicated occupancy. Finally, in order that this running record can be intelligently interpreted at a later date, he must enter any other data peculiar to his track layout.

Now, the information on train graph records is presently being used in two ways. First, it is used as a reference for the location of trains during the past few hours to provide estimated times for arrival. This information is usually needed to forecast arrival time at destination or intermediate terminals. Second, while the train graph information provides a permanent record, a considerable amount of time is used to get this record. Here is where we can spend more time in developing automatic equipment to reduce dispatcher's duties. Ideally, the result of such a development would produce a device which will automatically record all information necessary for a complete train movement record. This record would be permanent and accurate.

These are two areas of development wherein completion would relieve the dispatcher of time-consuming duties: one, to remove the routine telephone calls, and two, to automatically record complete train movements. More efficient dispatching could be expected if we could provide automatic devices to handle these routine decision-making and clerical duties.

Now, before we go any further, let's look back and

see how far we've gone in developing our completely automatic train. We've completed Step Number One—extended the remote control of train movement for more efficient co-ordination. Step Number Two, the addition of cab signals and speed control would be complete. And Step Number Three—our decision-making devices along the wayside are automatically making routine dispatching decisions for train movements, and it is now possible for one man to monitor the train movements of this railroad. The equipment also allows him to supplement the automatic equipment in case his personal judgment and training is required. The fourth and last step, is an expansion and extension of the work which we have already done in controlling trains themselves. We must now make our commands to the train more precise and feed them to the train as a continuous flow of information. This involves the installation of the automatic train control servo, which will be responsive to this flow of continuous information. This will then give us the automatic train. The feasibility and practicability of automatic controls, capable of interpreting a myriad of variations, has been proved by automatic equipment now in operation.

Increased Communication

Let's take a look at what we need in the way of communications from the wayside to the train. Basically, the communication facilities to the train must be increased in order to handle the larger number of elementary commands that will be necessary. Once the communication facilities to the train are increased, we must provide for a new communication channel, which is from train to wayside.

This circuit is one which will report inabilities, malfunctions, and deviations from the commanded performance. It will also furnish a means by which closed-loop automatic train control systems can be provided, which include both the train and the wayside instrumentation. The installation of this final link of train-carried controlling equipment will minimize train crew requirements. This would be the last step needed to reach our objectives of completely automatic train operation. These are the steps we must take to produce the automatic railroad that will help us gain our major objectives: that of lowering railroad operating costs, the

continual improvement of service to customers, and the ability to more effectively sell this service in the highly competitive market.

As mentioned earlier, we already have automatic block signaling, automatic highway crossing protection, automatic route selection through complex interlockings, fully automatic interlockings, automatic speed and train control, automatic train identification, automatic train dispatching, automatic hot bearing detection, and the complex automatic classification yard. All of this equipment is operating at this very moment, and operating automatically. Can the completely automatic railroad be too far away? We believe that it is not, and that the key to the success of this program is based upon the desire and enthusiasm of the railroad industry to have such a system.

Well, we've covered a great deal of ground beginning with a review of past accomplishments and a look into the future. Among the subjects covered briefly was a review of what a few other industries have accomplished in the way of automation. We've seen that automation in the railroad field is not a new subject and that railroads have been dealing with mechanization in various degrees for a number of years. We have also seen that the railroad industry, because of its virtually complete control of right-of-way, is in a favored position to go further. As with all efforts of this nature, studies, calculations, tests, and the development of new equipment to refine and do the job better are always required.

The degree of automation justifiable for individual situations on our railroads will vary from the adoption of relatively simple mechanization processes and systems all the way to the ultimate system briefly described here. Each case must be studied in the light of its contribution to the railroad's efforts to make efficient transportation available at the lowest possible price and still provide a fair return to investors in the property.

It is our belief that the maximum utilization of the complete railway plant can best be accomplished by the application of automatic equipment wherever economically justified. And by careful planning, each step will bring the railroads closer to the tremendous potential of operating and economic advantages inherent in automatic operation without the need of retracing steps as progress is made.



INTERNATIONAL HARVESTER COMPANY

The Directors of International Harvester Company have declared quarterly dividend No. 168 of one dollar and seventy-five cents (\$1.75) per share on the preferred stock, payable September 1, 1960, to stockholders of record at the close of business on August 5, 1960.

GERARD J. EGER, Secretary

UNION CARBIDE

A quarterly dividend of Ninety cents (90¢) per share on the outstanding capital stock of this Corporation has been declared, payable Sept. 1, 1960 to stockholders of record at the close of business August 5, 1960.

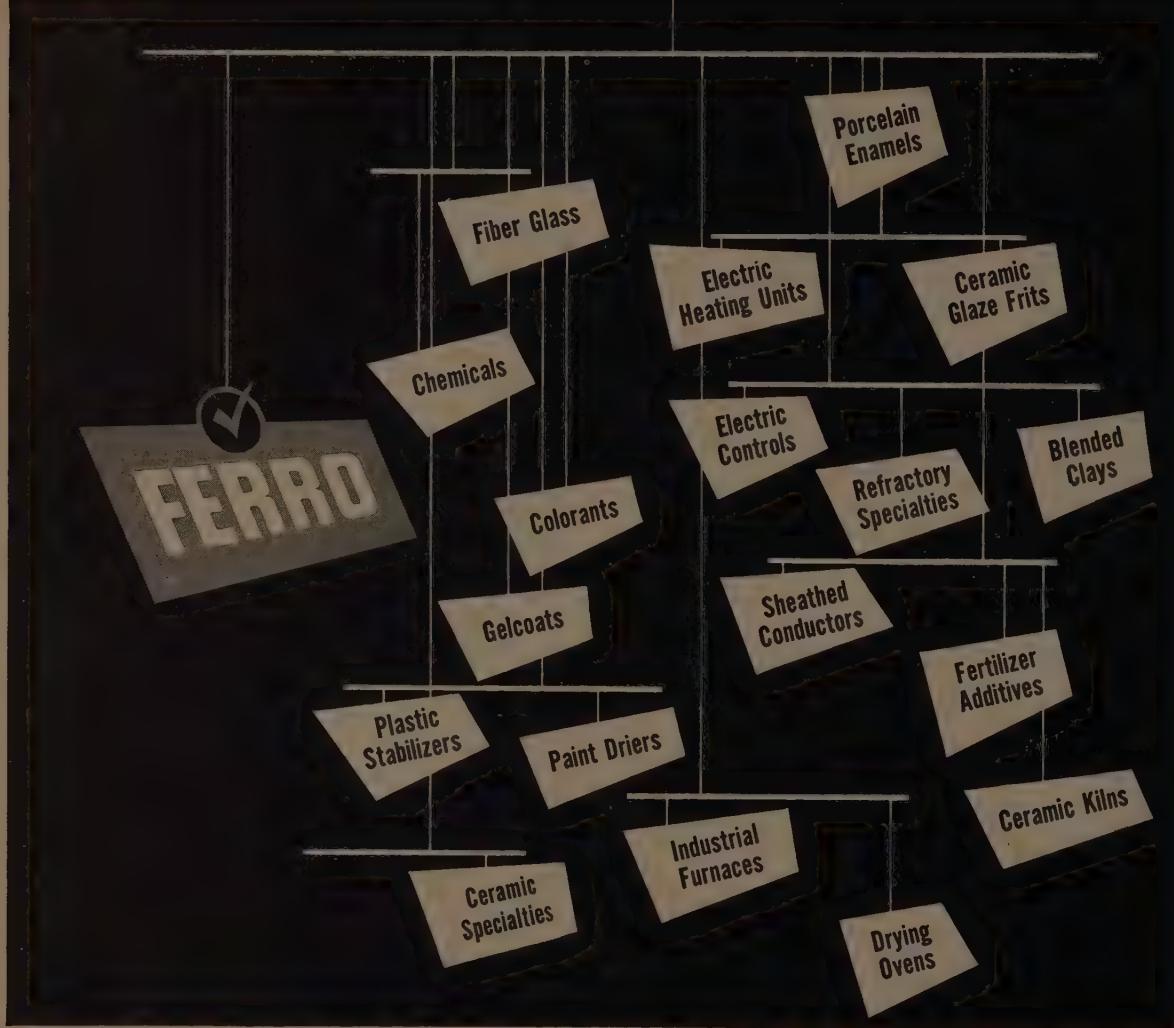
JOHN F. SHANKLIN
Secretary and Treasurer
UNION CARBIDE CORPORATION



INTERNATIONAL HARVESTER COMPANY

The Directors of International Harvester Company have declared quarterly dividend No. 182 of sixty cents (\$.60) per share on the common stock, payable October 15, 1960 to stockholders of record at the close of business on Sept. 15, 1960.

GERARD J. EGER, Secretary



MID YEAR
COMPARATIVE
CONSOLIDATED SALES
AND NET INCOME

	Six Months Ended June 30	
	1960	1959
Consolidated Sales	\$32,858,000	\$31,615,000
Consolidated Income Before Taxes	\$3,591,000	\$3,598,000
Consolidated Income Taxes	1,862,000	1,809,000
Consolidated Net Income	\$1,729,000	\$1,789,000
Earnings Per Share on 803,289 Shares (Outstanding June 30, 1960)	\$2.15	\$2.23

(The foregoing figures are subject to examination by our independent Certified Public Accountants.)



FERRO CORPORATION

4150 EAST 56TH ST. • CLEVELAND 5, OHIO

Rail Diversification, an Income Producer

by Pierre R. Bretey

WHEN IT WAS FIRST learned that the Strategic Air Command was using the railroads in a combined defense measure (see page 63) we were—excusibly we trust—reminded of the old saw about Mohammed and the mountain.

Whatever the case, we're happy to know that in the minds of many the century-old railroads are now an integral part in aiding the United States Air Force to defend our country.

But long before this bit of "diversified activity" became publicly known, there was still another area (entirely apart from the normal function of the rails) where substantial income was being generated at an increasing rate over the years. This was (is) through large-scale ownership of property, in many instances acquired in the center of our larger cities, years ago, when the latter were relatively small and unimportant economically.

In other instances, the railroads have acquired land for industrial purposes, in order to induce industry to locate plants on their lines. These lands have usually been located in the outlying areas of the larger cities and as the trek towards the suburbs gained momentum, in the late 40s and throughout the 50s, the railroads in many instances benefited financially in participating in the great land boom of the past decade. In still other instances, many railroads have acquired oil or mineral bearing lands with a small number having either built their own pipe lines, or acquired an equity in a pipe line built by others. Then, too, certain railroads have acquired large stock holdings in other carriers.

Illustrative of the importance of these non-railroad assets, we might point out that the air rights of New York Central's Manhattan (New York) properties are estimated to have a value of \$250 million—1959 rental income \$13.8 million with the New Haven also deriving some benefit therefrom to the extent of \$5.3 million—and those of the Illinois Central in Chicago at over \$100 million. In downtown Philadelphia, the Pennsylvania owns valuable real estate made available to it when its Broad Street Station was razed and passenger operations transferred to 30th Street. The Chicago & North Western has real estate properties in Chicago no longer needed in its railroad operations. These properties, currently valued at \$40 million, are expected to be

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disposed of gradually. Last year some \$6 million was derived from the sale of these surplus properties.

Northern Pacific is the largest single property owner among the railroads, controlling some 8 million acres, followed closely by the Union Pacific with 7 million acres, and the Southern Pacific with 5.2 million acres. Some 3 million of Northern Pacific's acres are located in the rich, oil-bearing Williston Basin and still other acreages are lumber bearing which may well be appraised at around \$100 million, valuing such lumber holdings at \$15 per 1,000 board feet on the stump.

Union Pacific derives substantial income from its Wilmington oil lands located in, and adjacent to Long Beach, California as does the Santa Fe with its oil properties located both in California and in Texas. Southern Pacific enjoys some oil income from its land holdings albeit of much smaller proportions. Santa Fe also owns a controlling interest in Kirby Lumber Co., which has valuable lumber as well as oil and natural gas properties in Louisiana and in Texas.

Pipe lines are becoming a source of large income to the carriers. Southern Pacific alone in 1959 derived net earnings of \$4.5 million from its pipe line operations. Great Northern is currently building a pipe line from the Williston Basin to serve both the Twin Cities and Duluth-Superior. The Missouri Kansas & Texas (the Katy) has recently acquired an 18.7% interest in the Mid-America Pipe Line Co. and for some time past, the Northern Pacific has owned a 10% interest in the Butte Pipe Line Co.

The Bangor & Aroostook owns a 12% interest in the St. Croix Paper Co. and in order to accelerate its diversification program is planning to set up a separate company to engage in non-railroad activities. Such a diversification program as planned may well be the forerunner of similar future plans inaugurated by other railroads.

Air freight is gradually attracting the attention of

1960 Rail Earnings on Rise

Class I carriers have closely paralleled the major fluctuations of U. S. industry. Sharp declines were recorded in 1949, in 1954, and again in the years 1958 and 1959, earnings last year being badly affected by reason of the prolonged 116-day steel strike. Barring further labor interruptions in 1960, as well as unfavorable weather conditions which would adversely affect crops, earnings of the Class I railroads this year should recover to \$650 million and under optimum conditions, exceed \$750 million.

several carriers, the Chesapeake & Ohio having purchased a substantial minority interest in Slick Airways and the New York Central in the Flying Tiger Line. Interest of the railroads in this potentially rapid growing field would doubtless be accelerated should the Congress pass legislation allowing the carriers to acquire, without restrictions, transportation media in other fields.

Equities in Other Carriers

There are numerous railroads which over the years have acquired large blocks of equities of other carriers. Possibly the outstanding example is that of the Pennsylvania which owns 32.6% of Norfolk & Western, worth at current market prices \$18 per Pennsylvania common share, or \$4 greater than the valuation placed on Pennsylvania common stock (\$14) by the market. Ownership of 33.8% of Louisville & Nashville common stock is a valuable asset to the Atlantic Coast Line as is the ownership of a 23.0% interest in the Illinois Central by the Union Pacific, and of an almost 98% interest in the Burlington by the Great Northern and the Northern Pacific jointly.

Ownership of a controlling interest in the Texas Pacific, and in the American Refrigerator Transit, as well as the Missouri-Illinois, provide worthwhile income to the Missouri Pacific, while joint ownership of the valuable Pacific Fruit Express swell revenues of both the Union Pacific and the Southern Pacific importantly. Correlatively, benefits from such a controlling interest to both of these carriers are derived from large revenues obtainable in hauling produce from California eastward in Pacific Fruit's 39,000 refrigerator cars.

Probably the best example of diversification of transportation interests is that of the Canadian Pacific. Operating almost wholly within the confines of the Dominion of Canada where no restrictions exist with respect to ownership or control of one transportation system by another, Canadian Pacific owns the largest truck line in the Dominion; owns steamships sailing on

both the Atlantic and the Pacific Oceans, with some local inland services also operated; holds title to mineral rights in 11.3 million acres of oil bearing lands in both Alberta and in Saskatchewan yielding net income of \$4.0 million in 1959; owns a chain of commercial and tourist hotels including world famous Louise and Banff; owns telegraphic and radio communication facilities; owns an airline service extending from Vancouver to Australia westward, from Vancouver to Buenos Aires southward, from Vancouver to Europe northward over the North Pole and from Vancouver to Montreal eastward; and lastly, this system owns a 51.5% equity in what is probably the greatest lead-zinc mining company in the world, namely, Consolidated Mining & Smelting.

Income derived from these outside activities loom large in the financial picture of many railroads. For the larger and more important carriers, the percentage of Other Income derived from these miscellaneous assets as related to actual net income reported is shown in *Table I*.

REVIEW OF THE RAILS

And so much for diversification of the rails—a subject which many investors view in somewhat the same light as those who classify electronic stocks as "glamorous." A review of the rails' principal interest is now in order.

The most important single development affecting the railroads in recent years was the passage of the Transportation Act of 1958, which, among other things, eliminated the 3% excise tax on freight traffic, thus restoring to the carriers some measure of competitive equality; froze agricultural "exempt" traffic; gave promise of some measure of rate flexibility instead of the industry holding a rate umbrella over its competitors; and lastly, gave the power to the Interstate Commerce Commission to overrule State Commissions in eliminating unprofitable passenger trains.

From this legislation has stemmed an improvement in

Table I

	1959 Net Income Per Share Common Stock	1959 Other Income Per Share Common Stock	1959 Other Income as a Percent of Net Income
Pennsylvania Railroad (System) (a)	\$1.26	\$2.39	189%
New York Central Railroad (System)	2.03	8.77	186
Northern Pacific Railway	3.97	3.40	86
Atlantic Coast Line Railroad	4.74	3.64	77
Chicago, Milwaukee, St. Paul & Pacific Railroad	1.55	1.91	69
Southern Pacific Company (System)	2.57	1.56	61
Missouri Pacific Railroad	8.31(b)	4.23(b)	51
Union Pacific Railroad	2.71	1.44	50
Louisville & Nashville Railroad	5.50	2.58	47
Baltimore & Ohio Railroad	4.87	2.64	45
Great Northern Railway	4.35	1.76	41
Canadian Pacific Railway	1.97	0.88	41
Chicago, Rock Island & Pacific Railroad	2.84	0.98	34
St. Louis & San Francisco Railway	2.83	1.15	32
Illinois Central Railroad	4.83	1.30	27
Atchison, Topeka & Santa Fe Railway	2.45	0.60	22

(a) Before Miscellaneous deductions

(b) On Class "A" stock

the political climate. Despite a change in status of the Commission from the period when the railroads enjoyed a virtual transportation monopoly, the country's regulatory body, should it so decide, still has the power to redress the transportation imbalance which today exists by providing the carriers with a position of transportation equality. The Commission might even go so far as to rectify its major error of the late 20s by allowing the railroads to engage in trucking operations without restrictions, thus reversing a previous pronouncement to the effect that the motor truck would never be more than a substitute for a two horse team.

During the present interregnum leading to the further removal of such obstructions as are necessary to again restore the railroad industry to its once former high estate, there have been a number of bearish developments which have paralleled the improvement in the political climate in recent months:

(1) The industry has been saddled with heavier retirement and unemployment benefits, totalling some \$200 million annually, pre-tax. Such increased outlays have been approved by the Congress notwithstanding present costs of railroad retirement 2½ times, and unemployment benefits, 4 times, in excess of those of other United States corporations. In all fairness to the carriers, the railroads should be placed in a position of equality with other segments of industry with railroad labor receiving identical Social Security and Unemployment benefits as those employed in other industries.

(2) The industry has suffered from inflationary developments, having been subjected to a profits squeeze by reason of wage increases (in excess of 300% since 1939) not offset by corresponding rate increases. Competitive pressures have enabled rate increases of only 70% having been placed in effect during that interval, an amount insufficient to compensate for such increased labor costs.

A further profit squeeze appears inevitable since in recent weeks, several Arbitration Boards have awarded increases in wages of about 11 cents per hour to the various crafts. These increases have all followed a more or less similar pattern, being non-retroactive, with 50% of the award, or 2%, becoming effective July 1st, 1960 and another 50%, or 2%, becoming effective on March 1, 1961. Harmful cost-of-living adjustments have been eliminated, although cumulative three year increases of 17 cents per hour were frozen into labor's base pay. Total cost of these increases, including fringe benefits, should approximate \$200 million annually, pre-tax.

Featherbedding: \$500 Million

Since private trucks set a ceiling on freight rates as do passenger automobiles ceilings on passenger rates, funds wherewith to pay for such increased wages will probably be obtained only through further employment contraction, or through rate flexibility enabling the carriers to recapture business lost to competing carriers. Still a third alternative are changes in work rules which involve potential savings of some \$500 million annually.

In any event any freight rate increases are likely to be nominal at best.

(3) The industry now faces a possible freezing of jobs. Recently, the Supreme Court upheld the Railroad Telegraphers in agreeing that no job subsequent to Dec. 3, 1957 (date of the dispute with the Chicago & North Western Railroad) could be discontinued without full approval of the Telegraphers' Union. Obviously Congress should overrule this decision through proper legislation, for no industry — railroads included — can prosper or even long survive if management loses its right to manage.

These unfavorable factors however appear definitely overshadowed by a series of constructive forces outlined below:

Passenger Deficits

It is within the area of railroad passenger service that the most striking and dramatic political change has occurred. Whereas as recently as five years ago, railroads could obtain little or no sympathy from political subdivisions in attempting a solution to their passenger problem — Interstate Commerce Commission formula deficits of from \$500 million to \$700 million annually and out-of-pocket losses of from \$250 million to \$350 million — today such political subdivisions are attempting to salvage passenger operations, particularly in the commutation field. Alternate costs in substituting commuter services, with super-highways costing over \$5 million a mile in the suburbs and as much as \$75 million per mile in the heart of the cities, are now found to exceed the cost of providing outright subsidies or in reducing taxes on passenger facilities.

Already Public Service Commissions have allowed the New Haven to eliminate all commutation services south of Boston, and the Boston and Albany most of its commutation services west of Boston. Several other railroads including the Boston & Maine, have been allowed to reduce passenger services by as much as 50%. Worthwhile tax abatement, albeit not on a scale to eliminate out-of-pocket losses entirely, has been proposed by Governor Rockefeller of New York and by Governor Meyner of New Jersey, and recommendations for relatively minor tax adjustments on passenger facilities have been recommended by both Westchester County and the State of Connecticut Authorities. The City of Philadelphia is co-operating with both the Reading and the Pennsylvania Railroads under a plan whereby commutation out-of-pocket losses are likely to be absorbed in their entirety within five years.

It should be obvious to investors that a continuation of these favorable trends could make a marked inroad on existing passenger deficits and thus relieve the hard pressed carriers from an almost unsupportable burden.

Freight Rates

Equally striking to changes in the reaction of political subdivisions in attempting a solution to the perennial passenger deficit is an apparent new regulatory philosophy promulgated by the Interstate Commerce Com-

mission. While the Commission has not permitted the carriers full rate freedom under the so-called flexible provisions of the 1958 Transportation Act, nonetheless greater flexibility in setting freight rates has been permitted than for many years past. Illustrations include the so-called Paint Case, which assuming this decision has set a precedent, could conceivably allow the railroads to regain as much as \$500 million of high rated traffic lost over the past several decades to their competitors; two important Agreed System Rate Cases, iron pipe from Sault Ste. Marie to Chicago, and rug products from Amsterdam, New York to Chicago; volume coal rates as well as train load rates on other commodities; certain joint rates with other forms of transportation; and special container rates (piggyback) under various plans as developed by the carriers.

Rate Simplification

It may well be that rate simplification will in time be almost as important a factor as rate flexibility in restoring a large measure of lost traffic to the railroads.

Admittedly our railroad rate pattern is very complex and as a consequence there have been many critics of existing schedules. There are even railroad traffic officers who feel that a newer and simpler system should be devised in place of an antiquated structure that serves to handicap the carriers.

Additional straws in the wind suggestive of a more favorable political climate include comments by Secretary of Labor Mitchell, emphasizing that the railroads alone are the "great unsubsidized portion of the American transportation system"; a statement by the New York Public Service Commission unanimously recommending the repeal of the State's full crew laws, on the statute books for a period of 47 years; and opinions stated by such individuals representing diverse segments of our population, such as Paul Ziffren, California's National Committeeman and Senator Paul Douglas, who both have criticized our transportation policies including the building of high-speed expressways for use of suburbanites without proper compensation therefor. It appears ironical indeed that the railroads are now finding its defenders among the "liberals"—unexpected allies—whereas logically their defenders should be representatives of industry who are theoretically defenders of free enterprise. Alas for the carriers, these representatives have long since forsaken such principles and all too many of them prefer to eat at the public trough.

Ere we leave the subject of the changing political climate, it would appear desirable to quote excerpts of a leader in the public-opinion making field, an opinion which shows a growing awareness how sterile our national transportation policy has been over the past several decades, a policy which if pursued to its ultimate end, can only lead to economic disaster. Richard H. Amberg,¹ publisher of the St. Louis *Globe Democrat*, recently commented in part:

"I think subsidies are . . . a luxury we can no longer afford if we want to have the strength, the solvency to keep the nation strong enough to prevent aggression . . .

"The airlines have a subsidy that I think is utterly unconscionable in this day and age. The barge lines have been under attack in our paper for a long time and are going to be under much heavier attack real soon because I feel they have got simply what amounts to a license to steal in the fact that they are able to operate their business on their highways which are the rivers, without paying even the minimum cost . . . as they would pay if they were traversing the Panama Canal.

"On the truck lines, it is difficult to determine how much the subsidy is because of the wide variance between states . . . Some reasonable accounting method should be set up to find out whether the truck lines pay their fair share of the costs of the highways, considering all the factors involved . . . Perhaps they do in some cases by license fees and gasoline taxes . . . but I think by and large the truckers are getting a subsidy from you and me as taxpayers and I don't believe that is in the spirit of American free competition.

"There should be some greater spirit of give-and-take in the transportation business, for example: between the airlines and the truckers and the railroads and the barge lines. Yet it seems to me there is almost a universal spirit of anyone coming in and deciding they are going to try and harpoon anybody else's suggestion, whether it was the recent suggestion of several of the railroads they purchase a barge line or whether it is any suggestion for setting rates . . . There has to be a mutual getting together on the solution of the problems of the transportation industry, which are a considerable segment of the problems typical to all America.

"You and I and everybody of good will in this country have to sell the basic idea that featherbedding is basically immoral. It doesn't benefit the man who does it, it doesn't benefit the public, it doesn't benefit the employer, and it is of universal harm to all concerned. I would just plain be scared to death from looking at the figures in your industry, if I were the leader of one of the many unions that you have."

Further Operating Economies

In what areas may these economies be anticipated? Without endeavoring to single out particular areas in order of possible savings, one segment showing great promise is in the field of electronics, which in the case railroads, includes Centralized Traffic Control, Grade Crossing protection (automatic gates) and Automatic Classification yards.

Few investors realize that there is virtually no difference between an analog/digital computer simulating pipeline operations for an oil company, and one in an electronically controlled hump classification yard.

Other electronic devices of interest to the carriers in an effort to obtain worthwhile economies include hot box detectors, microwave communication systems, freight car tracing systems, automatic locomotive controls permitting operation of motive power without either motorman or engineer, and lastly, electronic accounting systems such as IBM 7080 transistorized data processing systems. Overall savings obtainable on invested capital range from 25% to 30% for signal systems, to still greater economies in other more specialized fields.

Other areas in which major economies may be anticipated are the use of machines in track work including

1. A talk before the American Association of Passenger Traffic Officers in St. Louis, April 6, 1960.



Radio beacon transmitters no bigger than a matchbook—another RCA contribution to space-age technology.

Tiny RCA space radios help "ECHO" scientists find a pinpoint in the sky

The pinpoint is the 100-foot aluminized plastic balloon now orbiting about a thousand miles above the earth. Its purpose: to establish the feasibility of long-distance communications by bouncing radio waves off an object in space to distant points on the earth's surface.

The balloon carries two RCA radio beacon transmitters, each scarcely larger than a matchbook, yet capable of being heard for two thousand miles or more. They send signals earthward, telling scientists where to find the balloon at night or when clouds obscure the sky. Because the radios are sun-powered, they are expected to broadcast throughout the life of the balloon satellite.

These amazing radio transmitters were designed and built by the Astro-Electronics Division at RCA's Space Center at Princeton, N. J.—birthplace of the satellite and ground-based radio equipment for the "Talking Atlas" satellite, the TIROS "weather-eye" satellite system, and other space-age achievements.

This program—called "Project ECHO"—is sponsored by the National Aeronautics and Space Administration as the first step towards a new system of global communications. Eventually, television programs may be viewed around the world through the use of these orbiting "radio mirrors."

The same RCA engineering and manufacturing skills that are helping man conquer space assure the dependability of the RCA Victor black-and-white and color television sets, radios and high-fidelity systems you enjoy in your home.



The Most Trusted Name in Electronics

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special units for withdrawing and inserting ties; machines for mechanization of shop work, and for mechanizing bridge building and bridge repairs; use of welded rail; building of track pre-assemblies; and, significantly, joint use of services, i.e. one carrier obtaining traffic rights over the lines of another system, with the latter abandoning its own line. A case in point is the joint agreement between the Lackawanna and the Erie in the 75 mile stretch between Binghamton and Gibson, New York where substantial savings have already been effected.

Possible Accounting Developments

Still another development, the importance of which lies in the field of greater cash flow rather than in the field of economies, but which at the same time would improve the competitive position of the carriers vis-a-vis trucks and airlines, has to do with either the possible passage by Congress of legislation permitting the railroads to set up a construction reserve, or alternately, either Congressional action or a Treasury ruling allowing the railroads to reduce present time limits during which they are allowed to depreciate their equipment in its entirety.

For several years running, Congress has failed to pass legislation permitting the carriers to set up a construction reserve. The latter may be defined as a proposal whereby the railroads would be enabled to segregate a portion of their earnings, which would then not be subject to any tax liability, provided such monies were to be used to purchase new equipment—either locomotives or freight cars—within a period of five years. Such a proposal would serve two purposes; 1. redress the inequities of railroads having to replace worn out facilities from accumulated funds since depreciation rates, adequate in a period of stable prices, have proven to be woefully inadequate in a period of inflationary pressures; and 2. provide the railroads with a means of purchasing new equipment at an accelerated rate to the benefit of the shipping public.

Not only has the Congress failed to help the railroads with respect to a construction reserve, but, of almost equal importance, the railroads have not been allowed to shorten their present allowable period of depreciation on existing equipment and thus restore a measure of competitive equality vis-a-vis their important competitors, namely trucks and airplanes. Currently, box cars are depreciated on a 28-year basis, yard diesels on a 25-year basis, and road diesels on a 20-year basis. Trucks and planes, on the other hand, are depreciated over a period of from 5 to 7 years thus allowing both of these segments to keep abreast of latest technological developments in equipment in each of these fields.

Doubtless progress along these lines is to be expected as an improving political climate gains momentum. A constructive development already effective, is a Treasury ruling whereby, in certain instances, selected carriers are allowed to depreciate their road diesels over a fifteen year period. This is a step in the right direction, although fifteen years is still too long a period since the

economic life of a road diesel—or any other railroad equipment for that matter—may be much less than fifteen years. Even this slight change as approved by the Treasury however, is constructive in that the railroad equipment dollar can, as a consequence, be stretched out, and, of equal importance, the industry's cash flow can be increased and thus play an important part in allowing the carriers to participate in equipment modernization at an accelerated rate.

RAILWAY MERGERS

In addition to the potential savings as outlined, substantial economies may be realized through mergers. While Congressional Committees have recommended mergers at varying times over the past 40 years, and while railroad managements have all too frequently displayed a decided apathy for most of this period towards mergers, at no time has the political climate been right, at least until now, for consummating mergers between individual railroads. Today, for the first time in the twentieth century, the political climate provides a sympathetic background for large scale mergers.

However we must emphasize that several hurdles must be overcome before presently proposed mergers become a reality. Railroad corporate structures are most complex necessitating detailed studies before all groups of security holders can agree to satisfactory exchange terms. Additionally, there are a number of outside parties, including labor unions, shipping organizations, and organizations representing commuters and local interests, waiting to be heard and all would in all likelihood become vocal and aggressive protestants should they consider themselves badly treated. Lastly, there are the regulatory authorities, the Securities Exchange Commission whose function in a railroad merger is merely to approve proxy material and the Interstate Commerce Commission which has full jurisdiction in all other financial areas, as well as competing railroads and, always lurking in the background, the Justice Department.

And yet, despite these imposing hurdles, the merger log jam was definitely broken in 1959 when the Virginian was allowed to merge with the Norfolk and Western and currently, all signs point to the successful consummation in 1960 or early 1961 of mergers between the Erie and the Lackawanna; and between the Soo Line, the Wisconsin Central and the Duluth South Shore & Atlantic.

Progress Reports

Progress may also be reported in connection with the proposed merger of the Chicago & North Western with the Minneapolis & St. Louis; of the proposed merger of the Atlantic Coast Line with the Seaboard Air Line; of the proposed merger of the Norfolk and Western with the Nickel Plate; and of the proposed merger of the Chesapeake & Ohio with the Baltimore & Ohio. In all four of these merger proposals, the Boards of Directors of all of the carriers involved have approved merger terms as proposed. Studies are being processed leading

CLASS I CARRIERS

Operating Revenue	Avail. for Fixed Charges	Fixed Charges	Fixed Charges Times Earned	Net Income	Cash Dividends	Maintenance	RATIOS			Gross Profit Margin (a)	
							Millions	Millions	Transportation		
1959	\$ 9,826	\$1,005	\$375	2.68x	\$578	\$400	30.9%	39.6%	78.4%	48.3%	10.4%
1958	9,564	1,035	380	2.72x	602	410	30.8	40.1	78.9	49.0	10.5
1957	10,506	1,160	369	3.14x	740	435	31.8	39.0	78.4	48.1	11.9
1956	10,551	1,291	364	3.55x	876	445	31.3	38.3	76.8	47.9	13.8
1955	10,107	1,341	367	3.66x	921	439	31.4	37.3	75.6	47.0	15.3
1954	9,370	1,099	382	2.88x	682	374	32.9	38.7	78.8	49.4	11.7
1953	10,664	1,356	405	3.35x	903	382	33.4	36.3	76.3	47.5	15.4
1952	10,581	1,316	442	2.98x	825	338	32.8	36.9	76.1	47.9	16.0
1951	10,391	1,159	420	2.76x	693	329	33.0	38.3	77.4	48.2	14.5
1950	9,473	1,258	428	2.94x	784	312	31.6	36.9	74.5	46.2	17.3
1949	8,580	901	421	2.14x	438	252	33.7	39.8	80.3	48.9	11.1
1948	9,672	1,172	425	2.76x	698	289	31.6	39.5	77.3	46.9	14.9
1947	8,684	965	437	2.21x	479	237	31.9	40.0	78.3	47.7	12.3

(a) Percentage of Gross Revenues carried through to Net Railway Operating Income before Federal Income Taxes.

to the merger of the Rock Island with the Milwaukee, and the Great Northern-Northern Pacific-Burlington merger proposals, promulgated several years ago and thought to have been more or less permanently stymied, are now again being revived.

The key to the merger movement of course, is Interstate Commerce Commission approval, and at this writing, that body seems decidedly sympathetic to such merger proposals as have been promulgated, recognizing that annual savings on the order of hundreds of millions are involved without further capital investments. Should the Commission approve of the consolidation of the Norfolk and Western with the Nickel Plate, then the merger movement will doubtless gain momentum so that many carriers—particularly those of medium and of smaller size—will be forced to jockey for position and the ultimate outcome may well be that instead of there now being an approximate 85 important Class I railroads, this number may be reduced to only 15 to 20 major systems, as a consequence of large scale consolidations either now proposed or envisioned.

For the Norfolk-Nickel Plate merger would doubtless be followed by a merger between the Pennsylvania and its presently 32.6% owned subsidiary, the Norfolk and Western, thus forming a giant System, largest in the country. Such a consolidation would also include three important carriers now controlled by the Pennsylvania, namely, the Lehigh Valley, the Wabash and the Detroit, Toledo & Ironton. It is in the light of these possible developments that New York Central's rear guard action in attempting to force itself into the proposed Chesapeake & Ohio-Baltimore & Ohio orbit may be explained.

Surprisingly enough, merger developments have not been reflected to date by any worthwhile market advances. Market skepticism due to a combination of interminable delays and difficulties in working out merger terms acceptable to the majority of shareholders has thus far operated to dampen market enthusiasm. Yet merger developments do provide a potentially explosive market force, and investors would be well advised to watch current developments carefully.

In addition to a sizeable amount of Other Income reported year after year by selected carriers, many railroads may well benefit through obtaining large tax credits, and, in certain instances, substantial cash payments. This observation should not be too surprising when it is considered that the country's railroad plant, exclusive of rolling stock, represents an original investment of \$19 billion. Since 1946 alone, some \$15 billion has been spent in capital improvements by all Class I carriers combined. Present replacement cost of railroad facilities in the United States has been estimated by the Interstate Commerce Commission at \$47 billion.

With the development of the combustion engine and the growth of competing transportation facilities . . . largely financed by government funds—all Class I railroads combined, now have a capacity much in excess of that required to handle the country's traffic needs. Since 50% of all traffic handled by the railroads is carried on only 10% of the carriers' total mileage, and only 2% of such traffic is hauled over 30% of such trackage, it is evident that much of this light density mileage could be abandoned to advantage, which would make possible tax credits previously referred to. Correlative benefits to the railroads would include reduced track maintenance on mileage abandoned, and in selected instances, large cash benefits from sale of roadbed or properties adjacent thereto. Some of the light density mileage now rendered economically obsolete by competitive media is located in sections of the country where State Highway departments might use these roadbeds, already graded, for highway purposes. In such instances, substantial cash revenues might well be paid by the various states to these carriers so fortuitously situated.

Illustrative of this potentiality is the line of the New York Central from Boston to Albany. Should the New York Central be allowed to abandon its line between these two cities, and alternately, be permitted to obtain traffic rights over the Boston & Maine to gain access to Boston, then the Commonwealth of Massachusetts would probably pay the New York Central a handsome sum for its right of way, which would then be used as

a nucleus of an improved highway between Boston and New York's capital city.

Over coming decades therefore the railroads may well become beneficiaries of fairly large scale tax windfalls, at the same time obtaining worthwhile cash benefits as well as maintenance savings on abandoned track facilities.

CONCLUSION

Reflecting the prolonged steel strike in the summer and fall of 1959 and disappointing earnings results of the first four months of 1960—a trend likely to continue well into July—the Dow Jones average of 20 railroad stocks declined from a July 8th, 1959 high of 173.56 to a May 10th, 1960 low of 137.68 since which time a modest recovery has taken place, at the time this was written, to 141.35. Assuming, as appears likely, that steel production in coming months should reflect a reversal of current industry practices of decelerating inventories, and industry begin to build up inventories only modestly, and further assuming that this year's grain crop must perforce be moved since previous years' crops are crowding the country's present limited storage facilities, then railroad earnings could show some worthwhile improvement for the balance of the year. Such a possibility, especially when compared with the July to September disappointing earnings of last year, may well be reflected in a recovery of market prices much in excess of that already recorded since last May. *Additionally it should not be overlooked that merger developments may provide the background for an explosive market movement in selected rail stocks.*

Many equities of the carriers possess investment characteristics, yield from 5 to 7%, and appear attractive for current investment. Among such issues are the Norfolk & Western whose results are now being combined with those of the Virginian, the Chesapeake &

Ohio, the Western Maryland, the Santa Fe, the Union Pacific, the Northern Pacific, the Denver & Rio Grande, and somewhat more speculative, the Rock Island and the Illinois Central. Dividend increases within the next 12 months on both of these two stocks seem a reasonable expectation.

However it may well be that the explosive merger situation could provide greater than average appreciation to holders of the so-called merger candidate equities, especially if the Interstate Commerce Commission were to approve the presently proposed consolidation moves. Such railroad common stocks as Minneapolis & St. Louis, Nickel Plate and Wisconsin Central appear particularly attractive on this score and Baltimore & Ohio may well benefit importantly by reason of the bidding for control of that carrier by both the Chesapeake & Ohio and the New York Central. Should the Florida East Coast reorganization be consummated prior to the year end, as anticipated, this carrier's common stock should also benefit speculatively in the light of the company's important real estate holdings held primarily in Miami, in Fort Pierce, in St. Augustine and in Jacksonville. Both Pennsylvania and New York Central possess a two pronged speculative sword, so to speak, in that they are highly leveraged and they reflect present merger developments.

At this writing institutional and individual investors might well take a fresh look at the railroad situation recognizing that there is every likelihood of a continuing favorable political trend and of the Interstate Commerce Commission approving current merger proposals, thus generating renewed speculative interest in railroad equities. Again, as stated in 1959, the next several years should be most rewarding to those who follow and interpret railroad news as it unfolds over the Dow Jones news ticker.



OUTBOARD MARINE CORPORATION DIVIDEND NOTICE

A cash dividend of twenty cents (20c) per share on the Common Stock of the Company has been declared by the Board of Directors, payable August 25, 1960, to stockholders of record August 5, 1960.

R. F. WALLACE, Secretary

July 22, 1960



Manufacturer of the Broadest Line
of Building Products in America

THE FLINTKOTE COMPANY New York 20, N. Y.

quarterly dividends

have been declared as follows:

Common Stock*

45 cents per share

\$4 Cumulative Preferred Stock

\$1 per share

\$4.50 Series A Convertible Second Preferred Stock

\$1.12½ per share

These dividends are payable September 15, 1960 to stockholders of record at the close of business August 19, 1960.

JAMES E. McCUALEY
Treasurer

August 3, 1960.

128th consecutive
dividend

STANDARD BRANDS Incorporated

COMMON STOCK DIVIDEND

The Board of Directors declared a quarterly dividend of 40c per share payable September 15, 1960 to stockholders of record on August 15, 1960.

PREFERRED STOCK DIVIDEND

The Board also declared a dividend of 87½c per share payable September 15, 1960 to stockholders of record on September 1, 1960.

Joseph H. Hoyt
Treasurer

July 28, 1960

AMERICAN INVESTMENT COMPANY OF ILLINOIS



REPORTS RECORD FIRST HALF

Highlights from the Semi-Annual Report

for the six months ended June 30	1960	1959
Volume of business	\$194,220,018	\$167,366,903
Customer loans outstanding..	\$267,188,847	\$226,017,436
Gross Income.....	\$ 29,424,746	\$ 26,809,154
Net Income.....	\$ 3,633,857	\$ 3,160,613
Earnings per common share...	\$.70	\$.60
Common shares outstanding..	4,791,030	4,785,170
Subsidiary offices.....	553	501

Net earnings, volume of business and customers' loans outstanding all set new highs for the company in the first six months period. Our net earnings increased nearly 15 per cent over the comparable period a year ago and the earnings available for each common share increased over 16 per cent.

As our growth in loans indicates, we are continuing to grow at a faster rate than the rapidly expanding consumer credit industry. In the very near future our subsidiaries will open consumer finance offices in our 40th state—North Dakota.

The results which American Investment Company achieved during the first half of 1960 have been encouraging. These accomplishments have been attained in the face of some uncertainty in several sectors of the economy. The company's performance thus far this year gives us reason to feel that our results for 1960 should exceed those of last year.

A copy of our semi-annual report is available upon request. Write to: Public Relations Dept., American Investment Company, 8251 Maryland Avenue, St. Louis 5, Missouri.

AMERICAN INVESTMENT COMPANY OF ILLINOIS

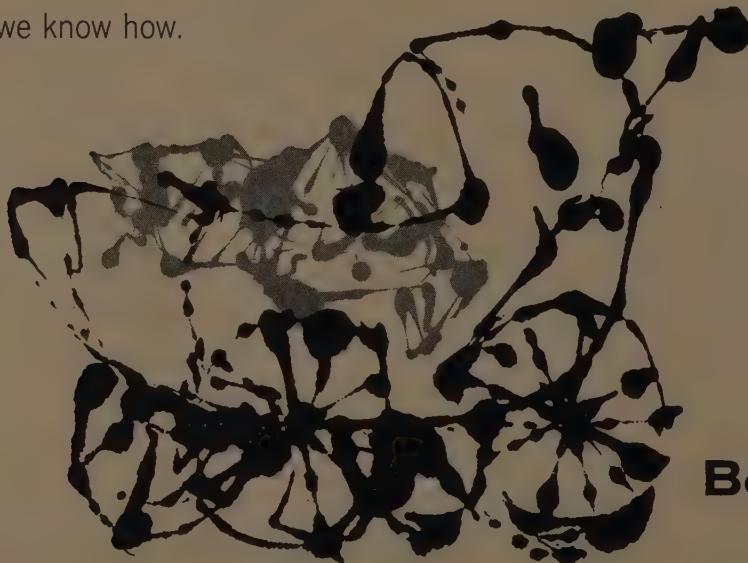
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help. In the early hours of life, if he happens to be premature, he will need a Beckman oxygen analyzer with his hospital incubator to prevent retrolental fibroplasia — a disease that can result in blindness. ● Helping to control the air he breathes will always be a part of our job — in factories, in atom-powered submarines or in what used to be the great outdoors. He won't like smog . . . and we're working on that problem too. ● His food will be fresher and tastier because a Beckman pH meter played a part in its growing and processing. The clothes he wears will look better, last longer because of Beckman Instrumentation. No matter how far he goes or how high he flies, we'll be there with him . . . with everything from events-per-unit-time meters for measuring engine speeds, to servomotors for his automatic pilot. ● There's scarcely a life that isn't touched by Beckman research, development, manufacture and service. We'll help baby all right. And we know how.



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Money Market Forces

by H. FREDERICK HAGEMANN, JR.
President, Rockland-Atlas National Bank of Boston

It is never easy to talk about the forces of the money market and to make predictions, but as my friend, Dr. Marcus Nadler, is reported to have said: "It is better to be positive even if wrong; for you will be more interesting right now, and you can only be proved wrong by the passage of time."

In discussing the forces of the money market, my purpose is to show how all these forces are affected by our ideological fight against Russian Communism in particular and state socialism in general.

Free men and free markets go together, and flexible interest rates are absolutely essential to the long run successful operation of the capitalistic system.

Russia and the United States are the two leading powers in the world representing these respective ideologies. Russia has a larger land area, a larger population and a larger labor force—although starting from a very much lower base her rate of industrial production has been increasing on the annual rate of 12% vs. an annual 3½% for the United States. Labor productivity in Russia has been increasing at a rate of 6% vs. 2½% in the United States. Both the United States and Russia have large annual savings, but in Russia 90% of the savings are directed into heavy industries and defense, and only 10% into the increase of production of consumer goods.

If the solution in this contest between Russia and the United States is to be by war then it means co-operative suicide for both. If this is to be an economic battle, however, the Soviets have certain weaknesses:

1. In their system they are likely to have more trouble in transferring power from one top leader to another whereas our elections are carried on without violence and purges.

2. The Russian satellites may be a source of power, but they are also a source of trouble and require considerable attention to control. They also cause considerable embarrassment because the standard of living is higher in the satellites than in the main part of Russia.

3. The very nature of the Soviet system with all the decisions being made by a few individuals at the top is not conducive to best economic results.

If the United States is to win in this economic war we will have to do the following: stop the growth of government bureaucracy; balance the budget, have a surplus for debt retirement, and maintain a strong fiscal policy; and increase our ability to compete in foreign markets.

All three of these steps call for discipline and a spirit of austerity.

Karl Marx predicts that under the capitalistic system there would be a concentration of wealth and an increasing amount of misery among the masses, but just the opposite has happened.

In the United States there has been a spreading out of the wealth and an increasing amount of prosperity among the masses. It would be ironical if the capitalistic system failed because it was a success. The very success may be our undoing. Budget Director Maurice H. Stans, in a recent talk, said that too many times throughout history, civilizations have been locked in a carnival mood when the lights went out.

The position of the United States in world economic affairs has changed drastically since the end of the war and we now find a number of other major trading nations in the world which are able to produce goods of equally fine quality and at

a lower cost. Immediately following World War II, we were practically the sole producer of most goods and could sell them around the world at almost any price. Now we find our competitors active around the world and actually invading our own country with imports of excellent quality that substantially undersell goods produced here at home.

The United States representatives at the meeting of the International Bank in New Delhi, in the Fall of 1958, were asked some embarrassing questions and at that time the representatives of various countries stated that strong measures would have to be taken to prevent the dollar from fast becoming a soft currency.

By the time of the next annual meeting, in Washington in the Fall of 1959, steps had been taken and the position of the dollar substantially improved. Whether we liked the idea or not we were forced to sober up, economically speaking, and made to practice what we preached in the economic field. Because England, France, Germany, Italy, Japan, Switzerland and Canada had taken the necessary steps internally to preserve the external value of their currencies, we found it embarrassing to be the only major nation inflating our currency.

How was the confidence in the dollar restored:

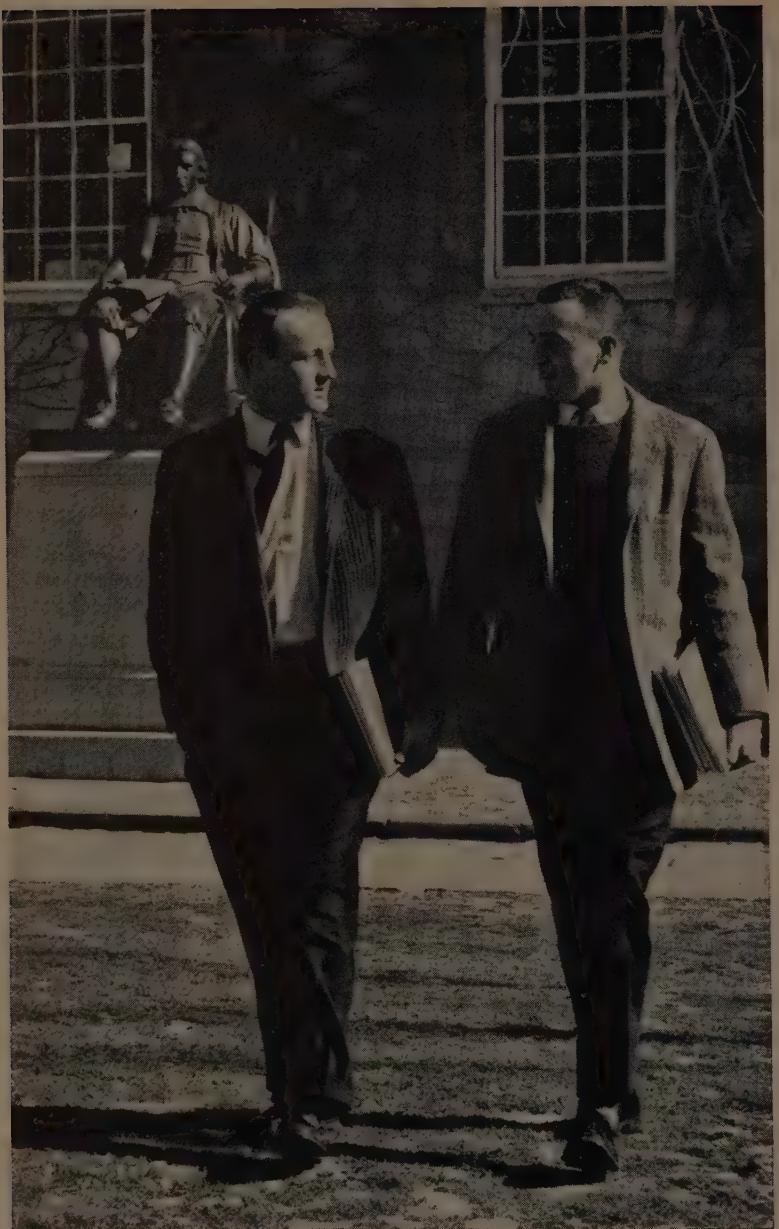
1. It was restored through the cooperation of Congress in helping to bring about balanced budgets. Senator Lyndon Johnson and House Speaker Sam Rayburn were both very helpful in controlling the irresponsible liberal spenders. Presidential vetoes also helped.

2. Our government officials urged steps be taken to encourage exports.

3. The government moved to have restrictions lifted against American goods in foreign markets.

4. Our government took steps to have other countries share in the cost of foreign aid and the development of more backward countries.

The Federal Reserve Board had a job to do in helping to bring about more economic and domestic con-



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fidence in the dollar by: increases in the discount rate; increases in the margin requirements; and appropriate open market operations.

Federal Reserve Banks are like other banks in that they have to watch their solvency and their ratios. The continuing outflow of gold has forced the Federal Reserve to act in a way so as to restore the confidence of other central banks throughout the world and bring the gold outflow within bounds.

The United States Treasury Department had a job to do in the restoration of dollar confidence: it has endeavored to lengthen the debt at every favorable opportunity; it showed a willingness to increase rates on government securities to make them attractive and competitive in the investment market; and it went out of its way to explain the complicated problems of interest rates and debt management to Senators and Congressmen, labor leaders and anyone else interested in learning.

The Non-Bank Market

The success of the 5% notes, known as "as the Magic Fives," signalled around the world that we had a bond market in the United States in which non-bank buyers would participate. The 5% notes were a big success, along with other issues, and in the last 18 months over \$20 billion of government securities have been placed in non-bank hands. In this classification there was a marked increase in the holdings of government bonds by individuals, the first increase in many years. The sincerity of Secretary of the Treasury Anderson, Chairman Martin of the Federal Reserve Board, and President Eisenhower—all working together to preserve the integrity of the dollar—did much to cause foreign nations to stop worrying about the dollar and to cease withdrawing gold from our shores.

The collapse of the Summit Conference may make budget balancing more difficult and may eliminate a possible income tax reduction, but I do not think over the long run it will make any substantial difference in the economy. We are already

spending over \$40 billion for defense.

In looking over the various private institutions involved in the money market the commercial banks of this country are fairly heavily loaned up with the ratio of loans to deposits; in New York City it is around 70%, and the ratio in the country approximately 63%. Loans have tended to be on the strong side and deposits on the weak side. Also the banking system may be divided into two classes—those banks that are over-loaned or over-invested, and those that are under-invested or under-loaned.

BUSINESS CORPORATIONS

As reflected in the figures of the reporting member banks of the Federal Reserve System, business corporations since the first of the year [this article was written in early June], have increased their loans at the banks by about \$700 million in the first five months in comparison with an increase of about \$250 million in the first five months of 1959. Corporations, in the 18-month period, Dec. 1958-May 1960, increased their holdings of short-term Treasury securities by over \$10 billion to a record high \$26 billion. Yet, loans to corporations over the March income tax payment time went up over \$1 billion, proving that while some corporations were borrowing more money than they ever had before, others had more short-term securities than ever before.

Some of the basic factors contributing to the slowing down of our economy have been: possible over expansion; increased foreign competition; unsettled political outlook throughout the world, including the United States; and consideration of the fact the present business cycle had been moving on the upside for over 24 months, as of April 1960.

Vice President Richard Nixon, at the Fiftieth Anniversary of the Harvard Business School, said in effect that if we lose the economic battle with the Russians it will be because they are moving toward the right in adopting capitalistic methods while we have been moving to the left and adopting socialistic and commu-



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nistic methods. If we lose this battle it will not be due to economic strength of communism, but due to the fact we have weakened our capitalistic system by unsound socialist changes.

I am assuming we want to win the struggle against the Russians and prove our capitalistic system is better, and therefore will proceed on orthodox financial lines. A democratic victory by some candidate socialist inclined could modify this, but even now, in many socialist countries, easy money and inflation are in disrepute.

Lack of Flexibility

At the present time the foreign holdings of short-term United States government securities are about equal to our gold supply. Both are in the neighborhood of \$19 billion. The relationship has changed from an extreme when, prior to 1950, our gold holdings were over \$24.5 billion, and foreign holdings of short term government securities only eight billion. The amount of our gold will only be adequate provided we continue to merit the confidence of foreign central banks and foreign businessmen—and providing we operate on a sound financial basis, and live within our income.

It is my feeling that even if business in this country turns down sharply that neither the Treasury nor the Federal Reserve System has as much flexibility as it had before the other leading nations of the world went in for sound money. There again is an international money market, and gold does flow from country to country for there are other currencies in the world that are completely convertible and internationally considered as sound or sounder than the dollar.

Unless all or most of the leading countries in the world, due to extreme unemployment, are forced to turn to low political interest rates, I feel we are somewhat limited to what we can do in this country to counteract a downturn by creating artificially low interest rates.

It would appear that the values of various leading currencies have stabilized at least for the next several

years. Also it would appear that unless we want to be conspicuous as the sole major inflationist nation we will have to submit to economic discipline so as to maintain the external value of the dollar.

If we look around the world it would appear that raw materials are in supply and that there is plenty of plant capacity in most lines.

As a result of these two factors, business managers around the world are tending to slow down a bit on plant expansion and are tending to cut down on their inventories and to become more liquid. In times such as these, businessmen tend to accumulate short term government securities and then slightly longer securities, if yields continue to decline on the very shortest maturities.

CONCLUSION

Under current conditions, and for the foreseeable future, I would think that bonds should tend to do better—that government bonds around the five year range would be more attractive than longer governments due to the fact that the longer market is selling on an artificial basis, due to the lack of supply caused by the 4 1/4% ceiling on government bonds maturing over five years contained in the existing Federal statutes.

Exceptions to this statement would be some of the deep discount bonds for inheritance tax purposes, or some deep discount bonds for capital gains purposes. High grade corporate bonds seem reasonably at-

tractive at current levels, particularly those with call protection.

While it is very difficult to generalize on common stocks, in my opinion there should be a tendency over the next few years for stocks to sell at lower multiples times earnings, rather than at the generally high ratios now current.

It would seem to me that the forces of inflation have been slowed down around the world. There is a much more conservative tendency in the leading nations of the world and I do not see any of them in the foreseeable future artificially easing their money rates. Rates around the world are substantially higher than they are in this country, and it would seem difficult for this country to artificially ease rates against this background without causing a substantial outflow of gold.

Long range we still have the threat of inflation and the fact that if business conditions throughout the world should recede, and great mass unemployment result there would be the strong temptation to take the easy way out by inflation, even though the wrong way. In running a bank, a business, or an investment portfolio, in a world environment such as we are now in, flexibility of mind is a great asset, along with patience and a respect for time proved economic principles.

Just as you see, in small print on many price tags, "Price subject to change without notice," so I put in print concerning my views, "Views subject to change without notice."



CALIFORNIA-PACIFIC UTILITIES COMPANY

Quarterly dividends payable September 15 to shareholders of record September 1, have been declared at the following rates per share:

5% Preferred	25¢
5% Convertible Preferred .	25¢
5.40% Convertible Preferred	27¢
5 1/2% Convertible Preferred	27 1/2¢
Common	22 1/2¢

D. J. Ley, Vice-Pres. & Treas.

July 18, 1960

AIR REDUCTION

Company, Incorporated

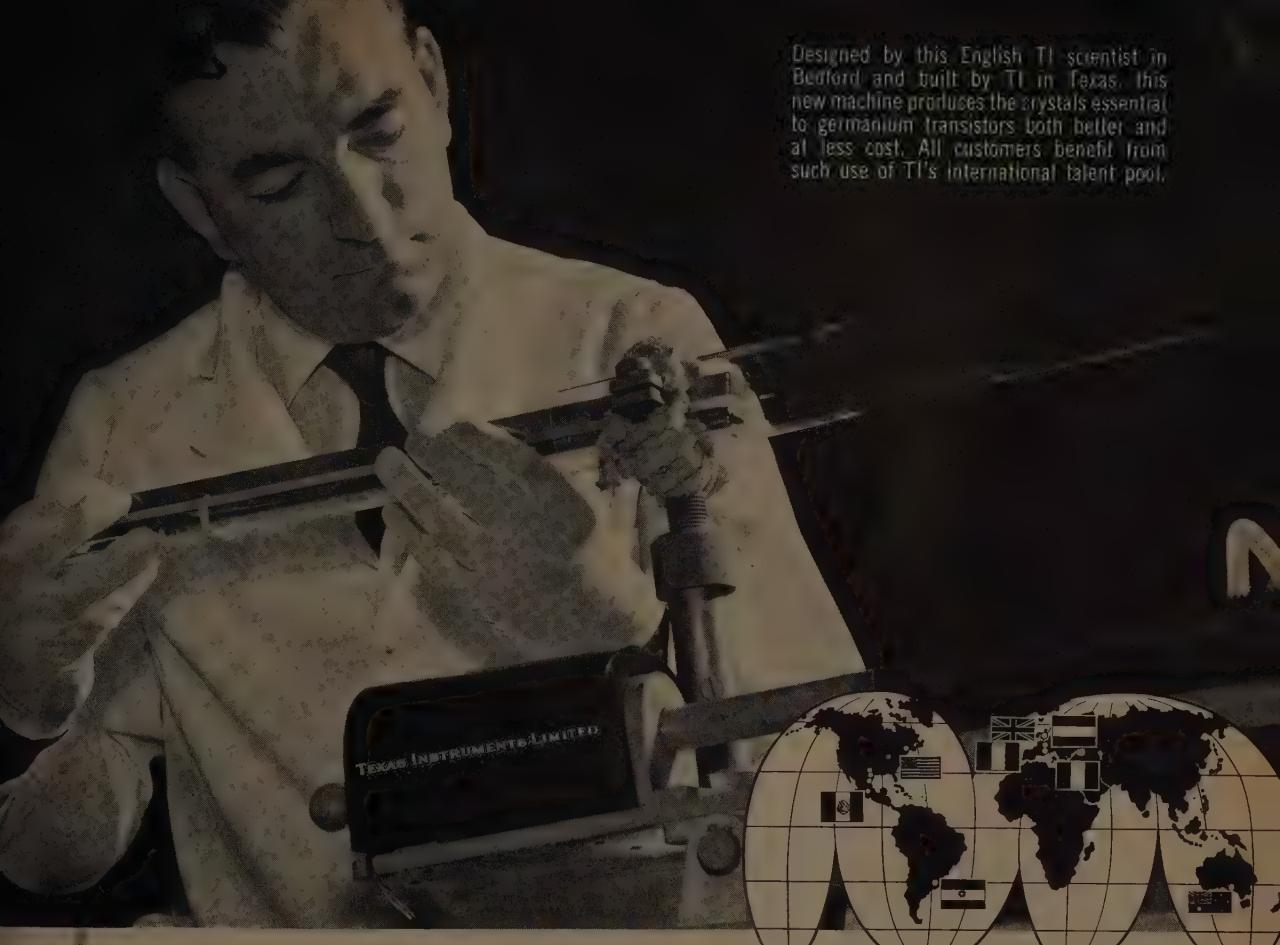
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COMMON STOCK DIVIDEND

The Board of Directors has declared a regular quarterly dividend of 62 1/2¢ per share on the Common Stock of the Company, payable on September 6, 1960, to holders of record on August 18, 1960, and the thirty-fifth regular quarterly dividend of \$1.125 per share on the 4.50% Cumulative Preferred Stock, 1951 Series, of the Company, payable on September 6, 1960, to holders of record on August 18, 1960.

July 27, 1960.

T. S. O'BRIEN, Secretary



Designed by this English TI scientist in Bedford and built by TI in Texas, this new machine produces the crystals essential to germanium transistors both better and at less cost. All customers benefit from such use of TI's international talent pool.

CREATIVE ANSWERS TO GLOBAL NEEDS ASSURED BY TI'S
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Just as this English scientist helped his Texas "cousins" increase their manufacturing capacity 4,832 miles away, "local" customer requirements throughout the world are being answered by Texas Instruments worldwide pool of thinking from a wide variety of nations and experience.

For example, when the Semiconductor-Components division in Dallas sought a process which would produce germanium crystals for transistors better, faster and at less cost, it called on Dr. John Powell (above) of Texas Instruments Limited in Bedford, England, who already had conceived an approach to the answer. His unique horizontal crystal puller—designed in England; developed and built in Dallas—cost one-fifth as much as existing machines and solved the problem, *increasing the yield and decreasing the cost* of this widely used semiconductor.

The fresh look applied by each Texas Instruments division and subsidiary benefits the company—and in turn its customers—from two directions. First, individual freedom allows each operation to concentrate on specific customer requirements and the technologies to satisfy them. Second, all of these various entities have available the benefits of *reciprocal thinking* in research and engineering, manufacturing and marketing.

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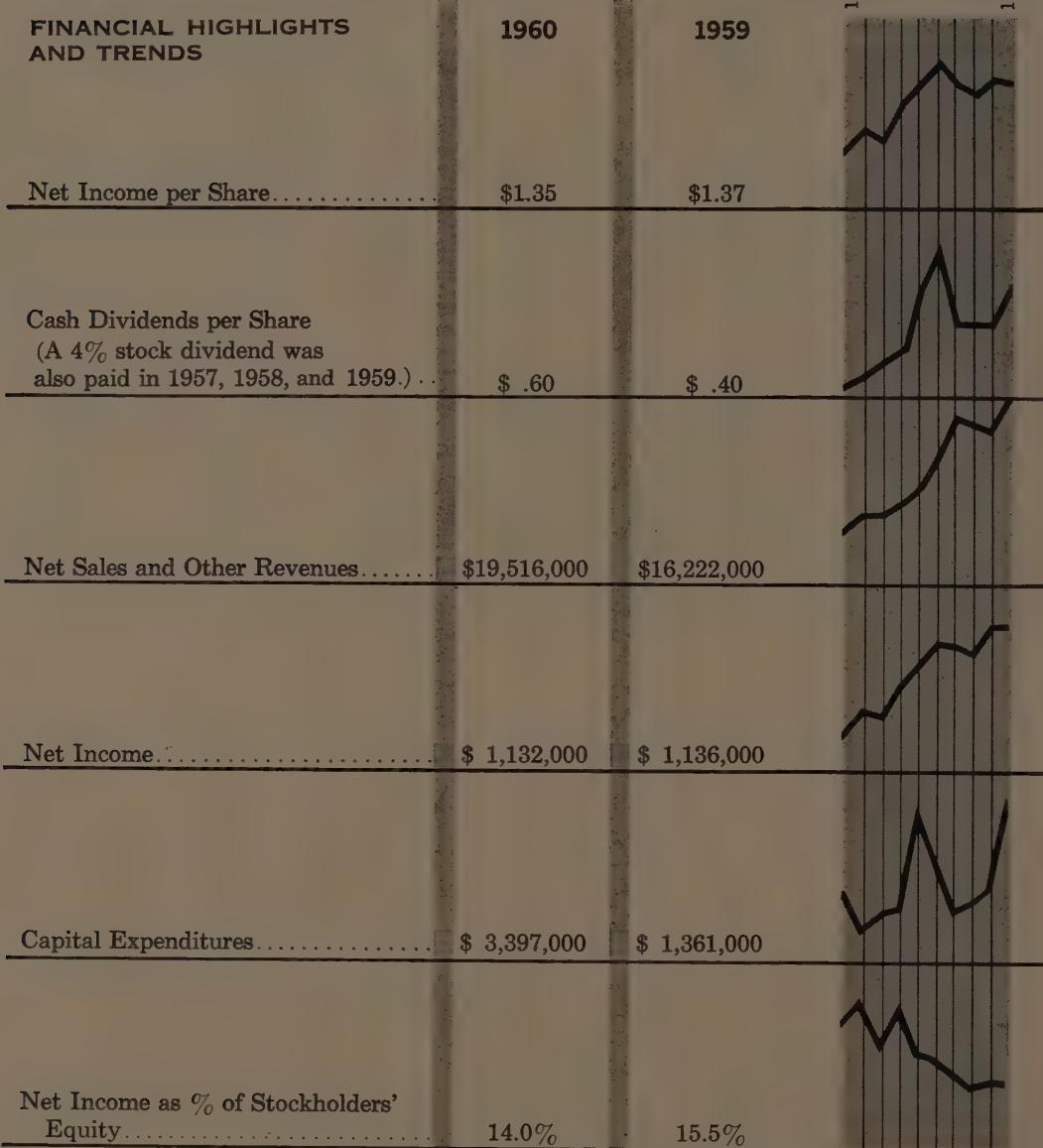
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Electronics: Problems and Prospects

by BRUCE R. CARLSON

Assistant to the President, Sprague Electric Co.

The electronics industry has the distinction, among all our major industries, of being the hardest to depict in quantitative terms. It is usual to define electronics in terms of functions, and the engineer will tell you that it is all products built around vacuum tubes or semiconductors, and so forth.

But this definition includes everything from the mammoth computers of the SAGE system to the knobs on your portable radio, making it difficult to talk about electronics in terms of its end products, even though the list includes many of the most dramatic embodiments of scientific progress one can conceive of. Rather, we are forced to look at electronic markets.

In looking at these markets, it is usual to talk about the four major areas of consumer, industrial, military, and replacement parts. On this basis, one comes up with estimates ranging from \$6 to \$15 billion or more for the current size of the industry, depending upon what he chooses to include. I will therefore make my own position clear at the outset, that I am talking in terms of total sales of end equipment at factory prices, excluding the value of the components contained in this equipment, and excluding also the various services such as broadcasting revenues, repairs, and the sale of phonograph records. In these terms, the industry is now running at a rate of about \$9.5 billion a year, compared to some \$4 billion at the time of the Korean War.

There have also been some important changes in the makeup of the industry's sales. Although it is not my purpose to review the statistics in detail, it is well to keep in mind that electronics for national defense has increased from 46% to approximately 53% of the total,

while electronics for business and industry has risen from 11% to 16%. These gains have been largely at the expense of the home entertainment market, which, although still very large, has dropped from 34% to 20%.

Looking to the future, I expect still further shifts in the composition of our industry's sales, although perhaps not quite so marked as those already behind us. The consumer market will probably continue to decline in importance, say to about 17%, while the share representing electronics in industry will show the largest increase and account for something over 20% of the total by 1970. Moreover, in the aggregate, military electronics will probably continue to represent something over one half. The percentage of electronics to total military procurement has increased from 7% of total defense spending, at the time of Korea, to roughly 14% at present, and appears headed for 20% by 1970. It is therefore not difficult to foresee a gain of up to 50% in the dollar value of military electronics, even if total National Security budgets remain in the vicinity of \$45 billion a year.

Competition to be Keen

I would like to turn now to the subject of competition in the electronics industry, for despite the continued growth which I think most of us would say is a reasonable certainty, I believe the 1960's will be characterized by some rather marked differences from the decade of the 1950's upon which the investment status of electronics is largely predicated. I have always been a long-term bull on the electronics industry, but even an optimist must recognize that it was relatively easy to show

large profits in the early 50's, when TV sets were enjoying the first rush of consumer demand, and when total military procurement was rising from an annual rate of less than \$4 billion to a \$13 billion rate by 1954.

It seems to me that there is not much doubt that the electronics business is going to be more competitive in the next decade than it has ever been before, and I would like to suggest that this competition is not going to be limited to the research laboratory, where new products will doubtless continue to be developed at an accelerating rate. In the absence of some of the unusual stimuli of the early 50's, competition in terms of manufacturing efficiency and good service to the customer will, I think, catch up with and maybe even surpass competition to develop a better system or piece of equipment as the prime determinant of individual company profits.

In my company, we often think of competition as essentially the time lead a company has. This is clearly illustrated by the many concerns, whether in electronics or any other technically-based business, that have gained a substantial time lead over their competitors as a result of outstanding competence in research. But there is another kind of time lead, which is usually less evident but no less important, and that is the time lead a company may enjoy in its ability to bring manufacturing costs down faster than selling prices. Especially in periods of rapidly expanding markets, any growth industry is bound to attract new concerns to its ranks in great numbers, and it is therefore not surprising that as the newcomers strive for a foothold in the market, the long-term trend of prices is downward. This has certainly been the case in electronics to date, and will continue to be one of the economic facts of life in the future of our industry.

Role of the Transistor

The development of the transistor business over the past 11 years illustrates this point well. Since the invention of the transistor in 1949,

there has been a constant and dramatic development of new types of ever higher speeds and power ratings, and with much greater environmental capabilities. As each new type has been developed, the first prototype units have been manufactured at high cost and sold at an even higher price. These high prices have limited the use of early production to essential military gear, where cost was not the dominating factor. As the manufacturers gained experience and were able to establish manufacturing controls and mechanize their operations, prices have been reduced so that a more widespread use has been possible, but the cost even today of many critical types, such as high-speed switches, remains high, and the newer prototype units are still very expensive.

Thus, the transistor business is still in the stage where the attention of both producers and users is focused on the achievement of a technical lead time through improvements in the device itself, and there are today so many different categories of transistors for various purposes, and made by different manufacturing processes, that it is very difficult for anyone to keep up with the parade.

At present, not very many of these types are in direct competition for their markets, because the semiconductor art is still expanding rapidly; but I believe it is certain that the time will come in transistors, as

it did in vacuum tubes, when the technical lead time will give way to the economic lead time. In other words, I believe the time is not far off when the cost-reduction potential of the various competing processes will be at least as important as the technical characteristics of the product. That this is recognized to be the case is attested by the fact that virtually all market research people in the industry agree that the price of semi-conductors will continue to decline, rather rapidly in some lines. My own studies of this market suggest that the average price of all transistors sold in 1965 will be about \$1.15, compared to \$2.70 in 1959, with the drop in the silicon types much greater than in germanium.

More recently, another area has come to our attention in which there is also a preoccupation with technical progress to the exclusion of realistic economic factors; and that is in the realm of ultra-miniaturization of electronic circuits through the use of new assembly techniques. We see this especially in the very important military electronics market, and increasingly also in industrial and commercial electronics, such as computers and related data-handling systems. Both are characterized by a rapidly growing need for informa-

tion acquisition and processing. In military systems, this is reflected in the fact that ground-support equipment represents some 70% of the total cost of a ballistic missile system.

Needs of the Military Vital

The rapid development of information technology engendered by the needs of the military has also had a most important bearing on the growth of industry and scientific data-handling equipment, which constitutes the largest segment of the industrial electronics market. In light of the well publicized growth in this market, from less than \$50 million in 1954 to at least one-half billion dollars currently, it may surprise you to know that the total volume of computers and other data-handling devices built for military purposes in the same period probably exceeds the total built for commercial use by a considerable margin.

The development of systems large enough and fast enough to achieve the desired result in information handling has brought about a great increase in the number of circuit elements required, so that it has become increasingly difficult to package the necessary circuits in the available physical space. Until about 1950, all electronic circuits were made up of individual parts soldered together in a maze of hookup wire. This technique, known as point-to-

Harrison-Walker Refractories Company

Board of Directors has declared for quarter ending September 30, 1960 DIVIDEND of ONE and ONE-HALF (1½%) PER CENT or \$1.50 per share on PREFERRED STOCK, payable October 20, 1960 to shareholders of record October 6, 1960.

Also declared a DIVIDEND of \$.45 per share on COMMON STOCK, payable September 1, 1960 to shareholders of record August 11, 1960.

G. F. Cronmiller, Jr.
Vice President and Secretary

Pittsburgh, July 28, 1960

Pullman Incorporated

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A quarterly dividend of fifty cents (50¢) per share will be paid on September 14, 1960, to stockholders of record August 19, 1960.

CHAMP CARRY
President

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Trailmobile Finance Company
Swindell-Dressler Corporation
Transport Leasing Company*



American Metal Climax, Inc.

COMMON STOCK
Dividend No. 139

The Board of Directors has declared a dividend of Thirty Cents (30¢) per share on the Common Stock payable September 1, 1960 to stockholders of record at the close of business on August 22, 1960.

D. J. DONAHUE,
Treasurer.

point wiring, has been in use since the 1920's and will continue to be used where size is not a critical factor and low cost is important. About 1950, this static phase in the techniques of putting together electronic circuits began to give way to a very dynamic period in which assembly techniques have undergone a number of fundamental changes. This period also coincided with the development of the transistor, but while semi-conductors have played a most important part in the evolution, they are by no means responsible for it. Printed wiring boards have made their contribution, as have true printed circuits and other complex functional components. Starting with a maximum density of 20,000 parts per cubic foot with point-to-point wiring in 1950, we have, in the space of 10 years, achieved production capabilities yielding a maximum density of some 500,000 parts per foot, and the end is not in sight.

In the last several years, systems designers and component designers have begun to work hand in hand on this problem by reducing the circuits to more basic logical functions, and by combining the best available circuit elements, whether they be discrete components, complex components, printed circuits, semi-conductors, or thin films, to create functional components capable of reliable operation under the given conditions. Various approaches, often characterized under the heading of "microminiaturization" have been tried, including the Micro-Module concept being developed by the Signal Corps, ceramic-based microcircuits under investigation by the Diamond Ordnance Fuze Laboratory, and the experiments with solid-state functional blocks which have been widely heralded under the term "molecular electronics."

Profit and Loss: Large

Despite any claims you may have heard to the contrary, none of these, including molecular electronics, are simple devices in which individual circuit elements have ceased to exist. In varying degrees they employ most of the known techniques of film



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deposition, plating, etching, alloying, and diffusion. Furthermore, these techniques must be employed in sophisticated combinations which are difficult to control. As a result, the question of yield becomes even more critical than it is in the manufacture of transistors, where it can mean the difference between a very large profit and a very large loss.

VIEW FOR INVESTMENT

Nevertheless, these new assembly techniques do represent strides toward the ultimate in miniaturization, and as such they have been the subject of very widespread publicity, not only within the industry but in financial circles as well. From my standpoint in the industry, how fast can we expect to make use of these new tools? From your standpoint as an investor, are you justified in committing large sums to them?

Before trying to answer these

questions, let us examine the problem for a moment. The circuit functions in the solid state will not be handled as they are now. Today, if one desires to build an amplifier, he assembles components, tries the circuit, makes empirical adjustments, swaps components around until finally the desired performance is achieved. Although the best estimates of the need of the circuit may have been specified by the designer, a certain amount of trial and error is still necessary. Even with circuits of proven design, each new variation requires "debugging," possible change of circuit values, and a general prove-out period. Consider how this aspect of our electronic problem will be handled in the age of molecular electronics. The functional block designer will have to be proficient in the field of solid-state physics as well as in many other disciplines. He will be required to develop combinations of processes that will result in a single unit which has the exact desired circuit parameters, and no changes can be made in the finished blocks without starting over again from scratch.

All of this will take time. In the case of transistors it has taken 10 years and an investment of many millions of dollars to achieve the present state of the art; and to date we have hardly scratched the surface. In the early days, efforts to accelerate the use of transistors by short-circuiting prudent evolutionary steps were totally unsuccessful. The problems involving these new techniques are far more formidable, and it will take many years before the challenging development of reproducible functional blocks of proven reliability can be achieved. There can be no shortcut.

All the classic steps, from laboratory to development, to production engineering, to full-scale production will have to be followed. Then, reliability will have to be proven by millions of hours of life tests under simulated operational environments.

It is impossible at this time to predict with certainty which of the many approaches to miniaturization holds the most promise, but it seems quite certain that electronic systems to be

built for years to come will incorporate components as we know them today, as well as all of the other techniques which have been or will be developed, in that combination which achieves the best balance between cost, reliability of operation and availability in mass production.

The Problems are Many

Another question which is being raised with increasing frequency is whether the advent of this "new electronics"—in which I include the whole field of solid-state devices and the assembly techniques I have referred to—is going to result in the large manufacturers of electronic equipment and systems becoming integrated by turning out their own molecular functional blocks to replace conventional electronic cir-



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DIVIDEND NOTICE

The Board of Directors has today declared a regular quarterly dividend of fifty cents (50¢) per share on the Common Stock of the Company, payable September 10, 1960, to shareholders of record at the close of business August 18, 1960.

A. A. Finnell, Secretary

July 22, 1960

ROCKWELL-STANDARD
CORPORATION
CORAOPOLIS, PENNSYLVANIA



Southern California Edison Company

DIVIDENDS

The Board of Directors has authorized the payment of the following quarterly dividends:

ORIGINAL PREFERRED STOCK
Dividend No. 205
65 cents per share;

CUMULATIVE PREFERRED STOCK,
4.32% SERIES
Dividend No. 54
27 cents per share.

The above dividends are payable September 30, 1960, to stockholders of record September 5. Checks will be mailed from the Company's office in Los Angeles, September 30.

P. C. HALE, Treasurer

August 18, 1960



cuitry. Here again, it seems to me that there is a confusion between the technical time lead and the economic time lead, if any, which is the only thing that will cause these techniques to be adopted on a really wide scale. With respect to the technical, I have already indicated that the application problems are formidable; with respect to the economic factor, I can only point out that the trend in the past 30 years has been entirely in the other direction.

The only economic justification for the existence of the components producer is his ability to make the basic circuit elements available to the equipment assembler cheaper, faster, or better than the latter can manufacture them for himself. Years ago, every equipment manufacturer made his own capacitors, resistors, transformers and tubes, and the only reason they no longer do so is because they can purchase them more economically, given the applicable standard of performance, from a specialist in the radically different materials processing and other production methods involved.

Even the largest user of components today is not big enough to achieve the economics of large production runs that even a relatively small components maker enjoys, and this will be no less true of solid-state integrated circuits than it is of 2¢ resistors or \$20 transistors. In other words, it will be very difficult, if not impossible, for the large equipment maker to justify, for his own needs, the investment of the necessary funds in process development and manufacturing facilities to give him any real economic time lead, no matter how great his technical competence. Obviously, he will do so at any cost if the basic components producer is not alert to his own opportunities and responsibilities.

The biggest problem facing the components producer is to choose wisely among the new techniques available to him, to know when not to go into a new field, as well as when to get into it with both feet. This gets back to my first point, that in electronics, as in any other business, we have only markets to serve in the final analysis, and the investor

in electronics is buying only to serve these markets and not technologies, *per se*, no matter how fascinating they may be.

The tunnel diode is a good case in point. It is a wonderful device, capable under the proper circumstances of performing the vital function of signal switching at fantastic rates of speed. But there are half a dozen other good ways of performing this switching function—with transistors, with magnetic switching transformers, with tubes, and, believe it or not, with updated versions of the old-fashioned mechanical relay. The choice among them depends very largely upon the economics of each particular application.

The tunnel diode is also a relatively easy device to produce, but the circuitry does not exist today and probably will not exist for several more years that will make the widespread use of tunnel diodes economical. When it does exist, there will doubtless be a large market for tunnel diodes, and many companies will be making and selling them. For the present, however, they are in the forefront of electronic technology, but there are no indications that they are going to obsolete the transistor.

Although I am certainly not an unbiased observer, I believe that if the components producer can do a good job of timing in embracing the new developments, he represents an excellent way for the investor to participate in the whole range of possible new applications of electronics, even without being able to foresee exactly what these will be.

The electronics industry in the 1950's has passed through the most rapid period of technological change in the history of a business that has always been characterized by change. If anything, this pace will probably accelerate in the 1960's, and I am thankful that this is so. But I think it is equally certain that it will be increasingly difficult for all to profit from this growth, and that to do so will require a very careful balancing of the technical factors against the economic factors of each new development that appears on the horizon.

Finally, I also believe that Financial Investment Analysts, will be called upon to assess more fully than before the economic implications of new developments, and the ability of managements in our industry to achieve a profitable balance between scientific enthusiasm and business reality.

GOOD YEAR

COMMON DIVIDEND
No. 109

The Board of Directors today declared the following dividend:

22½ cents per share on the Common Stock, payable September 15, 1960 to stockholders of record at the close of business August 15, 1960.

The Goodyear Tire & Rubber Co
By R. L. Miller,
Secretary
August 2, 1960

THE GREATEST NAME IN RUBBER

Public Service Electric and Gas Company
NEWARK, N. J.



QUARTERLY DIVIDENDS

The Board of Directors has declared the following dividends for the quarter ending September 30, 1960:

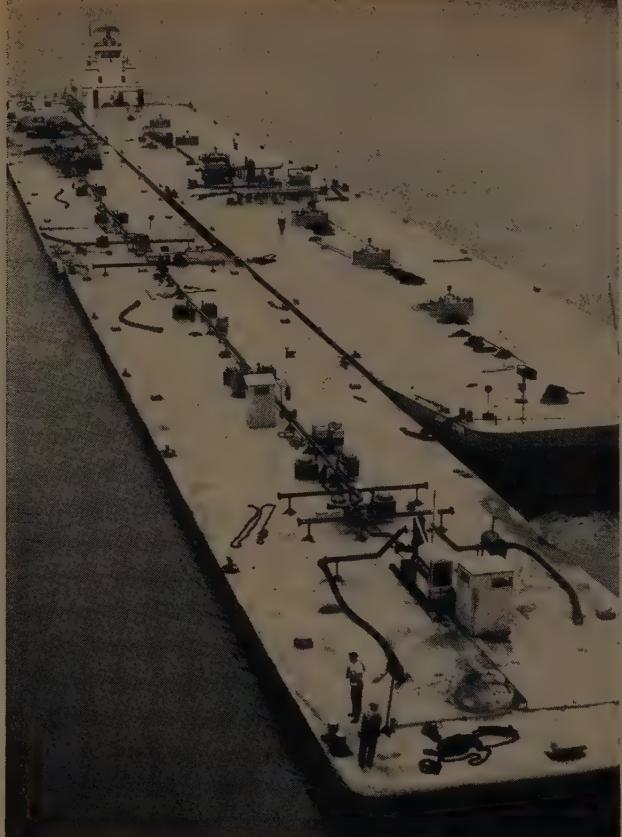
Class of Stock	Dividend Per Share
Cumulative Preferred	
4.08% Series	\$1.02
4.18% Series	1.045
4.30% Series	1.075
5.05% Series	1.2625
\$1.40 Dividend	
Preference Common	.35
Common	.45

All dividends are payable on or before September 30, 1960 to stockholders of record August 31, 1960.

J. IRVING KIBBE
Secretary

PUBLIC SERVICE
CROSSROADS OF THE EAST

30 MILLION MILES of Marathon gasoline move to market at a fraction of a cent per gallon



Moving huge volumes with cost-conscious efficiency, river barges and lake tankers extend the reach of the modern pipe line system that serves Ohio Oil's six-state midwestern marketing area. In a typical "tow" on the Ohio River, two million

gallons of gasoline—enough to take the average motorist 30 million miles—are barged 200 miles upstream at a cost of less than half a cent per gallon. Here is another example of our constant effort to hold down costs and increase efficiency.

HIGHLIGHTS OF THE SIX MONTHS ENDED JUNE 30th

	1960	1959
Total Revenues	\$175,973,000	\$143,990,000
Net Income	17,733,000	18,556,000
Net Income Per Share	1.28	1.41
Dividends Per Share80	.80
Capital Expenditures	24,616,000	17,951,000
Exploration Expense	15,164,000	13,916,000

Shares of Common Stock Outstanding (Excluding 124,400 shares in Treasury - 1960)	13,876,775	13,126,753
Net Crude Oil and Natural Gas Liquids Produced - Barrels Per Day	107,309	110,948
Crude Oil Refined - Barrels Per Day	99,610	44,778

On July 28, 1960, the Board of Directors declared a dividend of 40 cents per share on common stock, payable September 10, 1960, to shareholders of record August 12, 1960.

THE OHIO OIL COMPANY
Findlay, Ohio

Producers • Transporters • Refiners • Marketers of **MARATHON** and **SPEEDWAY 79** Petroleum Products

Outlook for Oil Stocks

By KENNETH E. HILL, Partner
Eastman Dillon, Union Securities & Co.

There is little doubt that the Free World petroleum industry is undergoing a major transition. Although there are many manifestations, the principal reason for the changes has been the development of world-wide surpluses of crude oil producing capacity. This has caused a movement toward control of refining and marketing outlets throughout the world to maximize producing profits, resulting in numerous mergers and purchases.

Coupled with this drive for markets has been lessened profit margins for both producers and refiners-marketers, brought on as much by lack of inventory control in the United States as by overcapacity throughout the world. This trend is most noticeable in the United States where return on invested capital has been steadily dwindling and in recent years reached inadequate levels for the risk-taking required to replace reserves of both crude oil and natural gas. Abroad, discoveries of new, prolific, cheap reserves by heretofore solely domestic companies have created more problems than profits, because only a fraction of the potential producing capacity developed by these newcomers can be utilized in the United States as a result of mandatory import quotas. And foreign markets will be both slow and expensive to develop because of the strongly entrenched position abroad of the largest and most powerful oil companies in the world with equally low-cost reserves and great financial resources.

As a result of these trends, so briefly discussed, earnings of nearly all representative companies decreased dramatically in 1958 from the high plateau of 1956-57. Moreover, industry earnings during 1959 recovered only partially, and 1960 offers the prospect of little or no im-

provement for the great majority of major companies. Earnings in 1960 are 10 per cent under the high levels of 1956-57 despite a booming world economy and world-wide consumption of petroleum 15-20 per cent higher than at that time. Thus, oil industry earnings have not participated in the current boom and may have to start from an even lower base at the nadir of the next business cycle.

These developments have not gone unnoticed by investors the world over. Despite bull markets in all the principal western countries, oil stocks are selling near their lows of 1957-58, and yet most other industrial stocks are considerably above their lows at that time, and various averages are up 50%. In this paper, I would like to re-examine the fundamentals of the oil industry, as well as recent developments, to form an opinion on the outlook for oil equities over the next several years.

Demand

Most industry economists are in general agreement that growth in demand for petroleum products is gradually slowing down, particularly in the United States. Whereas expansion over the postwar period to date has averaged 5% domestically and in excess of 10% abroad, a more realistic appraisal of the outlook through 1975 indicates that United States consumption will like-

ly increase at an average rate of only 3.5% per annum while the rest of the Free World displays an annual growth of 7.5%.

Over the intermediate term, however, we are forecasting a rate of increased consumption in the United States approximating 4% which would result in a demand for 11.7 million b/d of petroleum liquids in 1964. At the same time, Free Foreign consumption will likely exhibit a growth of 7.7% annually, resulting in a demand of 12.1 million b/d in 1964.

Thus, excluding stock changes, increased petroleum requirements are likely to necessitate additional annual production of nearly 1.2 million barrels daily over the next five years. Free World demand will reach 23.8 million b/d in 1964, which is an over-all average growth rate of 5.6% per annum. *Table I* shows the anticipated growth in consumption for the Free World.

It seems clear that the difficulties in our industry stem only slightly from the demand side of the equation. For even in the recession year of 1958, consumption was larger than in 1957 by 2.8% in the United States and 7% abroad. And a lessening of the rapid postwar Free World growth rate of more than 7% to an average annual increased consumption of 5.6% represents additional production needs of 1 million b/d in 1960, which will increase to nearly 1.3 million b/d for 1964. Surely this is not unsatisfactory and still qualifies the provision of energy in the form of hydrocarbons as a growth industry.

Supply

Since the resumption of traffic through the Suez Canal in 1957, it has become ever more apparent that the principal reason for the indus-

Table I
 Free World Demand

	1959 Million Barrels Daily	Estimated 1960 1964		Annual Increase 1959-64 %
		1960	1964	
United States	9.6	10.0	11.7	4.0
Free Foreign	8.2	8.8	12.1	7.7
Free World	17.8	18.8	23.8	5.6

try's problems is the overwhelming excess capacity to produce crude oil in relation to world-wide demand. Free World production during 1959 reached 17.5 million barrels daily, or about 76% of maximum efficient productive capability of roughly 23 million b/d. This surplus producing capacity, exceeding 5 million barrels daily, is quite large in all major producing areas but particularly in Canada and North Africa. Moreover, the pressure of this excess supply is causing highly competitive prices for both crude and products throughout the world, and lower profit margins in all divisions of the industry are its consequence.

In a paper entitled "Excess Producing Capacity in the World Petroleum Industry," published in early 1959, our estimates of productive capability and required production for 1959 and 1964 were listed for

each of the principal producing areas of the Free World. In *Table II* we show these figures, brought up to date for actual 1959 results. To date, nothing has been discerned leading us to change any of the estimates for 1964. At that time excess capacity will be reduced to about 4.5 million barrels per day, and the Free World will be producing at 83% of capacity, a much more satisfactory level.

Perhaps the most important fact to be observed is that relatively minor increases in United States productive capacity are anticipated over the next five years. Many factors lead us to believe that an increase of only one-half million barrels daily to 10.9 million barrels per day is all that may be expected, and this may be optimistic.

Probably the most pertinent reason is the decline in well comple-

tions since the peak year of 1956. From the 57,000 new wells, excluding service wells, drilled in that year, the figure dipped to 52,800 in 1957 and failed to reach 50,000 in each of the past two years. Moreover, well completions so far in 1960 are running more than 10% below the like period in 1959 when 47,500 wells were finalized. And completions are likely to remain well below 50,000 wells for several years to come. Moreover, the decline in wildcat activity has been even more pronounced than the figures reflecting over-all well completions. From the 12,600 exploratory wells drilled in 1956, the figure dipped to a low of 9,600 in 1958, or about 25%, and little recovery has been witnessed since that time. It now appears possible that 1956 witnessed the peak of United States drilling for all time.

This gradual decline in drilling

Table II
ESTIMATED FREE WORLD LIQUID PETROLEUM PRODUCING CAPACITY

		1959		1964		Production in % of Capacity %
		Production Capacity Thous. Bbls. Daily	Production in % of Capacity %	Production Capacity Thous. Bbls. Daily	Production in % of Capacity %	
Western Hemisphere						
United States	(1) (2)	7,920	10,400	76	9,450	10,900
Canada	(2)	520	1,000	52	850	1,400
Venezuela		2,770	3,500	79	3,400	4,000
Other Western Hemisphere		810	850	95	1,150	1,200
Total Western Hemisphere		12,020	15,750	77	14,850	17,500
Eastern Hemisphere						
Middle East		4,590	6,000	76	6,300	8,000
Africa	(3)	100	300 (6)	33	1,100	1,350
Far East		570	680	84	700	800
Europe		270	270	100	350	350
Total Eastern Hemisphere		5,530	7,250	77	8,450	10,500
Total Free World		17,550	23,000	76	23,300	28,000
From Other Sources	(4)	250	—	—	500	—
Total Supply		17,800	—	—	23,800	—
Estimated Consumption	(5)	17,800	—	—	23,800	—
(1) U. S. Crude		7,045	9,200	77	8,375	9,600
Natural Gas Liquids		875	1,200	71	1,075	1,300
Total		7,920	10,400	76	9,450	10,900
(2) U. S.		7,920	10,400	76	9,450	10,900
Canada		520	1,000	52	850	1,400
Total		8,440	11,400	74	10,300	12,300
(3) Algeria		15	150 (6)	10	550	670
Libya		—	30	—	400	500
Egypt and Others		85	120	71	150	180
Total		100	300	83	1,100	1,350

(4) Exports from Iron Curtain countries to the Free World.

(5) Excluding stock changes.

(6) When pipeline outlets are completed.

activity can be traced to such well-known economic forces as: higher costs of finding and producing oil, weak crude prices, slowing down in demand growth, and heavy proration. All these factors have resulted in a declining return on invested capital in the production of crude oil in the United States. A recent paper entitled "A Review of the United States Oil Producing Industry," by G. Dawson Priestman of Standard Oil Company (New Jersey), discusses this subject thoroughly. In his comprehensive survey, the return on net assets invested in the domestic producing industry declined from 36% in 1948, an abnormally high figure, to 6% in 1958 and appears to be stabilizing there. The return on replacement costs, that is the new investments in producing facilities made each year, appears to have declined steadily since 1948 from 12% to about 5% in 1958. These earnings on new money invested in the producing sector of the domestic industry are obviously too low to attract new capital, and the inevitable adjustment is setting in. Since the price of crude is unlikely to be increased, lack of available funds for production investments will require the curtailment of marginal drilling and producing operations. In this manner, the return on invested capital will gradually be raised.

It appears now that our industry is paying for its excesses of 1952 to 1957 when it drilled too many closely spaced wells, developing excess producibility but unsupported by adequate reserves. The most constructive course for the domestic industry would be to restrain drilling to 40-45,000 widely spaced wells for several years and yet maintain exploratory completions at 10,000 wells, thus maintaining reserves but not adding productive capacity. At the same time, costs should be trimmed drastically, marginal wells shut in, and efficiency improved throughout the producing phase of the domestic industry. It is only thus that our average domestic costs of finding, developing and producing crude oil can be brought down to competitive levels with foreign oil

Table III
Estimated United States Demand and Supply

	Supply				Net Imports	% of Demand %	Petroleum Liquids Producing Capacity			
	Domestic Demand	Natural Gas Liquids								
		Crude Oil	Thousands of Barrels	Per Day						
1959	9,550	7,050	875	7,925	1,625	17	10,400			
1960	9,950	7,300	925	8,225	1,725	17	10,500			
1965	12,150	8,575	1,100	9,675	2,475	20	10,950			
1970	14,500	8,900	1,225	10,125	4,375	30	11,100			
1975	17,000	8,650	1,200	9,850	7,150	42	10,600			

and our return on capital increased so as to attract new investment funds. In the long run, this is the only real salvation for the oil industry of the United States, not import quotas or tariffs.

Natural Gas

The drilling statistics of recent years also indicate a trend toward emphasizing exploration in areas where natural gas reserves are most likely to be found, such as South Louisiana. And most operators, small and large, have tended to concentrate their efforts in these potential gas producing areas. Despite the fact that gas production has been accused by some of actually resulting in a lower gross return to the industry because of the equivalent amount of crude oil that is displaced by this production—and gas certainly does sell cheaper at the wellhead on a BTU basis than crude oil—the fact remains that the industry's greatest exploratory efforts over the past five years have been expended on the development of gas reserves. This can be attributed to the very satisfactory return on invested capital that most operators are able to show in their gas production operations, despite Federal Power Commission regulation, and results from reasonable finding, development and operating costs. This is particularly true of new contracts for large gas reserves. With the recent approval of gas exports by the Canadian government and more emphasis on gas exploration in the United States, the steady year-to-year increase in the average price of new gas contracts may tend to level off. But the emphasis on gas exploration and de-

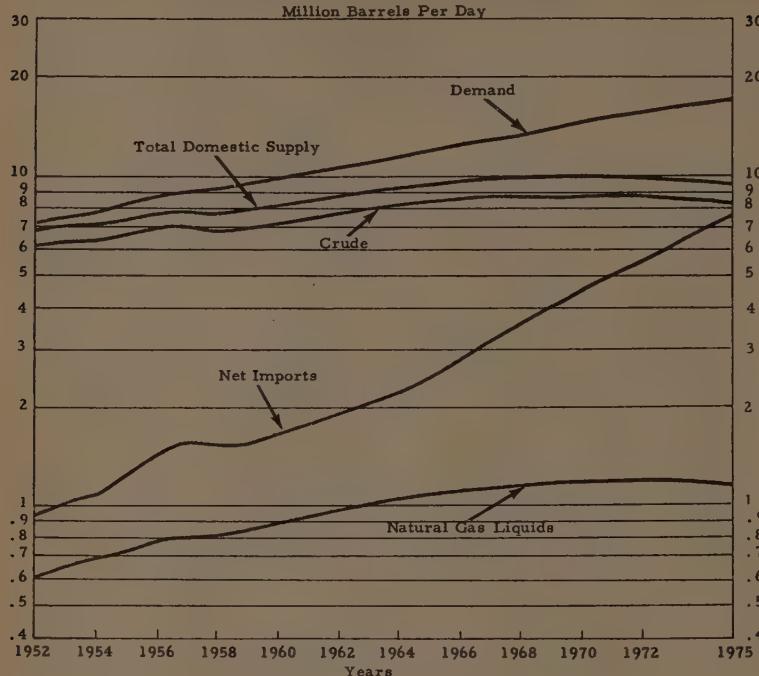
velopment is likely to continue for the foreseeable future.

When all of the factors entering into the finding and development of additional crude oil reserves in the United States are taken into consideration, it seems highly unlikely that there will be any significant increase in the future producing capability of the United States. And yet, growth in domestic demand is likely to display a 3/4% yearly increase over the foreseeable future, representing an annual increment of about 400,000 b/d. Inevitably, more and more of the domestic requirements for petroleum will have to be satisfied by imports from foreign producing areas once our present excess capacity is utilized rather fully. With this in mind, *Table III* illustrates the estimated United States demand and supply picture through 1975. This trend is better visualized in *Figure 1*.

Figure 1 dramatizes the necessity for a substantial increase in imports in crude oil between now and 1975. The chart is not intended to portray an exact picture of future supply trends but rather to demonstrate the net effect of many different forces at work and their probable resolution.

Walter J. Levy, international petroleum consultant, in a recent paper delivered in Ottawa, entitled "The World Oil Industry in the Sixties," has reached similar conclusions concerning the need for imports into North America in 1970. He estimates that imports for all of North America would need be more than 5 million barrels daily, or 34% of total consumption, about twice the ratio required in 1960. Although he does not give further details, possibly 500,000 b/d would be required

Figure 1
Probable Pattern of United States Supply



by Canada and Central America, leaving 4,500,000 b/d needed by the United States alone, which corresponds rather closely to the 4,375,000 barrels daily requirement estimated above.

As shown in the chart, United States peak production will probably occur during the period 1965-70. When this happens, all our increased demand requirements, amounting to 400-500,000 b/d annually, must be met from abroad. At the same time foreign demand will be increasing by 800-900,000 b/d yearly. Thus, total annual increased consumption is likely to be of the order of magnitude of 1.2-1.4 million b/d, all to be supplied from sources such as the Middle East, North Africa, and Venezuela. And it will not be until the United States does its full share of absorbing the free foreign excess producing capacity that the problems of our industry will prove more manageable. Even if reserves be large relative to production at that time, the great expense of effort and money necessary to provide additional facilities to produce, trans-

port, refine and market nearly 1.5 million additional barrels daily each year will necessitate adequate cash earnings. This will have to be provided by a firming crude oil and products price structure, which will result in much better earnings on invested capital.

In order to form a plausible estimate of the source of the greater portion of these imports, *Table IV* estimates production of petroleum liquids for the principal producing areas of the Free World in 1959 and 1964. Also, a breakdown of United States production by areas and states is included to discern the important trends in this country.

In the United States, the increase in production anticipated in Louisiana and Texas over the next five years is particularly noteworthy. It is expected that most other producing states and areas will show very little growth or may actually decline over this period. Canada should display a good increase in its production over this five-year interval as Canadian crude benefits from an above-average annual increase in

consumption, displacement of foreign crude in Toronto, as well as the gradual further penetration of United States markets.

Venezuela is an uncertainty because of the unstable political situation and the imposition of higher income taxes during 1959, which made its crude much higher cost than alternative sources to a number of producers. For this reason, it is our belief that the increment in Venezuelan production will be relatively small percentage-wise, despite the large reserves found in recent years.

A Balancing Factor

Estimates of growth in Middle Eastern production must be revised downward in the light of very sizeable discoveries in Algeria and Libya during the past two years. The latter two areas combined should be producing in excess of one million b/d by 1964. Percentage-wise, these two areas will experience the greatest growth over this five-year period. Since the prolific producing areas in the Middle East will continue to be regarded as a balancing factor for Free World demand, the cheaper and politically more desirable North African crude will tend to displace Middle Eastern oil. However, Kuwait and Iran are still likely to show larger than average percentage growth during this period.

Dr. Juan Perez Alfonzo of Venezuela and Abdullah Tariki of Saudi Arabia have proposed some form of international production controls designed to stabilize output at demand levels. This may be difficult to attain because of diverse political and economic aims of the principal producing countries, but if eventually successful, it could do much to improve the price structure in the international petroleum industry.

In conclusion, all American oil men should read the most recent OEEC study entitled "Towards a New Energy Pattern in Europe." Here the authors have discarded the historic nationalistic viewpoint formerly held by many Europeans, which demanded self-sufficiency of energy resources for economic, poli-

tical or security reasons. Rather, they have concluded that the essential basis of a long-term energy policy for Europe is that "The paramount consideration should . . . be an adequate supply of energy at the lowest possible economic cost with freedom of choice to the consumer." Could it be that the United States, much further removed from Russia, should consider adopting a similar foundation for a national fuels policy?

The principal result of a leveling-off in United States productive ca-

pacity while demand continued to grow by 400,000 b/d will be a gradual easing in the severe proration currently existing in Texas and Louisiana. By 1963 some improvement should be experienced in the number of allowable producing days in Texas. And, though crude prices may have experienced further erosion by then, prices for both crude and products should begin firming shortly thereafter.

For companies solely engaged in domestic production and refining, earnings will gradually improve. By

1970 most domestic fields will be producing near capacity, thus generating large earnings on invested capital. But if producing capacity will have reached its peak by then and begun its inevitable gradual decline, then some of these earnings must be regarded as semi-liquidating and nonrecurring. This will result from the production and sale of low-cost reserves at a rapid rate and the inability to replace them cheaply in the United States, particularly compared with available foreign reserves.

During the latter half of this decade, however, companies which not only have a strong reserve position in the United States, especially in Texas and Louisiana, but also have access to diversified, low-cost foreign production, will benefit in three ways. First, their domestic reserves will be liquidated more rapidly with consequent higher earnings from producing activities. Furthermore, imports will be increasing each year by roughly 400-500,000 b/d, thus providing additional profits to their foreign affiliates. And finally, the climate for prices will be one of firmness.

Outlook on Earnings

On a nearer term basis, the outlook for earnings is one of modest improvement based solely on increased volumes. Thus, the next several years are likely to demonstrate that only those domestic companies with large natural gas and petrochemical components will show important increases in earnings. And the larger internationals have all demonstrated that they are low cost producers of oil and gas in the United States and can improve their domestic earnings even under the present adverse circumstances.

For investment purposes, there is little doubt that the most satisfactory method of participating in the improved economic climate foreseen for the petroleum industry is through the ownership of stocks of strong, integrated companies. These companies comprise such a large percentage of the world oil business that their fortunes are inextricably tied up with the general welfare of

Table IV
ESTIMATED WORLD LIQUID PETROLEUM PRODUCTION

	Production		Increment in Production	Percent Increase %		
	1959	1964				
	Thousands of Barrels Daily					
Western Hemisphere						
United States*						
Texas	3,160	4,050	890	29		
Louisiana	1,030	1,450	420	41		
California	925	925	0	0		
Oklahoma-Kansas	965	1,100	135	11		
Rocky Mountains	1,170	1,275	105	9		
Other States	670	650	(20)	(3)		
Total	7,920	9,450	1,530	19		
Canada*	520	850	330	63		
Venezuela	2,770	3,400	630	23		
Other	810	1,150	340	42		
Total Western Hemisphere	12,020	14,850	2,830	24		
Eastern Hemisphere						
Middle East						
Kuwait	1,410	2,000	590	42		
Iran	920	1,350	430	47		
Saudi Arabia	1,085	1,350	265	24		
Iraq	845	1,150	305	36		
Other	330	450	120	30		
Total	4,590	6,800	1,710	37		
Africa						
Algeria	15	550	535	3566		
Libya		400	400	...		
Other	85	150	65	76		
Total	100	1,100	1,000	1000		
Far East	570	700	130	23		
Europe	270	350	80	30		
Total Eastern Hemisphere	5,530	8,450	2,920	53		
Total Free World	17,550	23,300	5,750	33		
Other Sources	250	500	250	100		
Total Supply	17,800	23,800	6,000	34		
Estimated Consumption	17,800	23,800	6,000	34		

*Includes natural gas liquids.

the industry. But of more importance, their raw material sources are so low-cost and so well diversified that their earnings performance will be substantially better than the industry as a whole. Furthermore, emphasis should be placed on those companies with the potential for large production increases in Libya, Algeria, Kuwait, Iran, Lake Maracaibo, and Texas and Louisiana in the United States, as well as having the ability to market this oil. This would include companies such as the major internationals, namely Texaco, Royal Dutch, Standard Oil (New Jersey), Gulf, Standard Oil of California, and Socony Mobil, in this order. Also, among integrated companies which were formerly completely domestic in nature but now have important foreign reserves, Phillips, Continental, Ohio, Signal and Sunray Mid-Continent appear to be sound investments. Despite the fact that Shell Oil does not own any foreign reserves, its very strong domestic position makes it an attractive medium for participation in industry growth. As a sort of special situation, Louisiana Land and Exploration should continue to benefit from its substantial royalty holdings within the state of Louisiana.

POSITION OF OIL EQUITIES

The stocks of most oil companies are selling close to their 1957-58 lows. And very satisfactory yields may be obtained on even some of the higher quality equities in the group. Institutions as well as individuals have played a prominent part in deflating these issues to current levels, principally because of the rather large percentage of their funds which these investors had in oil stocks, and because oils have lost their reputation as growth stocks. And while the great mass of liquidation appears over, it is likely to continue to a lesser extent for some time. By the end of this year, however, most investors will have such a small percentage of their portfolios in this group, as a result of liquidation and the relatively poor market performance of these stocks, that their only remaining decision is one of timing an eventual re-entry into

high-grade oils. And by 1963 this could well become a stampede.

It is our belief that the technical position of these equities may be likened to a saucer, with the oils near bottom and gradual accumulation warranted to participate in an eventual upswing. Institutions, which by nature generally have to plan some time ahead, may do well by beginning purchases during the current year. Should a minor recession and bear market develop over the next year or two, we believe that oil equities may decline little and even begin a gradual sustained upward trend very early in the eventual upturn.

Although the next recession may well be accompanied by some further modest downward revisions in crude oil prices, we do not believe

that the earnings of the stronger companies in the industry will be materially affected because of efforts taken to protect themselves against this eventuality by greater efficiency. Dividends of the companies recommended are amply covered by earnings, and some increase in dividends may be forthcoming as a result of the continued efforts by company managements to achieve the utmost efficiency in their operations and the build-up in cash positions as capital expenditures remain curtailed.

(Editor's note: John F. Bohmfalk, Jr., vice president of McDonnell & Co., also spoke at the New England Regional Meeting. However, in revising his talk, it was engagingly lengthened, with additional charts included. The article will be published in our November-December issue.)

P. Lorillard Company



DIVIDEND NOTICE

Regular quarterly dividend of \$1.75 per share on the Preferred Stock and regular quarterly dividend of \$.55 per share on the outstanding Common Stock of P. Lorillard Company have been declared payable October 1, 1960, to stockholders of record at the close of business September 9, 1960. Checks will be mailed.

New York, August 17, 1960

G. O. DAVIES, Treasurer

FIRST WITH THE FINEST CIGARETTES—THROUGH LORILLARD RESEARCH

1760 *P. Lorillard 200th Anniversary* 1960

TWO HUNDRED YEARS OF TOBACCO EXPERIENCE

<u>Cigarettes</u>			
OLD GOLD STRAIGHTS	KENT	NEWPORT	SPRING
Regular	Regular	King Size	King Size
King Size	King Size	Crush-Proof Box	Crush-Proof Box
OLD GOLD FILTERS	CRUSH-PROOF BOX	EMBASSY	EMBASSY
King Size		King Size	King Size
SMOKING TOBACCO	LITTLE CIGARS	CHewing TOBACCO	TURKISH CIGARETTES
BRIGGS	BETWEEN THE ACTS	BEECH-NUT BAGPIPE	MURAD HELMAR
UNION LEADER	MADISON	HAVANA BLOSSOM	
FRIENDS			
INDIA HOUSE			

Letters

Difference of Opinion

Editor:

Dr. Julian G. Buckley's article, "A Method of Evaluating Growth Stocks," in your March-April 1960 issue, glosses over the technique he has illustrated in his Table I for determining growth rate of a stock based on its performance during a previous 10-year period. It is clear, from the example of IBM, that the method involves weighting the annual growth of earnings for the nine intervals in a simple arithmetic progression: the most recent year is weighted nine, the preceding year is weighted eight, and so on, until the first interval, which is weighted one.

There are sound reasons in forecasting from past performance for weighting more heavily the more recent years, but it would be better for your readers if the article stated clearly that a weighting method is being used, and gave a few reasons why it is deemed appropriate.

Incidentally, if one determines the annual uniform growth rate for IBM to increase its earnings from 9.1 to 28.1 millions of dollars from 1939 to 1948, using interest tables compounding annually, the rate of growth is 13.3% per annum, not the 16.0% obtained by the weighting method chosen by Dr. Buckley.

The cumbersome method for estimating IBM's earnings in 1958 from the 16.0% annual weighted growth rate from 1939 to 1948, regarded as "necessary" by the author, can with propriety be much simplified. All one has to do is to look up or compute from logarithm tables what \$1 becomes when compounded annually for 10 years at the rate of 16.0% yearly. The amount is \$4.412. The 1948 IBM income of \$28.1 million is therefore predicted to become 4.412×28.1 , or \$124,000,000 in 1958, compared to the actual income of \$126,191,000.

Harold Lampert, Chairman
Consolidated Gas Utilities
Corp.

* * *

Solidify 'Financial' Journal

Editor:

It has come to my attention that the word "Financial" has been given such a subordinate and obscure size on the front cover of the Journal that it is still being referred to by individuals and organizations as The Analysts Journal and is being indexed under the old name.

Ayer's 1960 Directory of Periodicals lists the Journal as The Analysts Journal and it is being indexed under that name.

As you know, it was decided last year to change the name to what would be considered more appropriate, and in keeping with the type of periodical. There are quite a number of Journals, both domestic and foreign, under the name of Analysts Journal.

Since it is the desire of The National Federation of Financial Analysts Societies to make the name of the Journal distinctive, it has been suggested that the word "FINANCIAL" be given a more prominent size and display in order that the new name may be recognized.

Joseph M. Binns
Member NYSSA

* * *

Gremlins in the Reception Room

Editor:

Popularity of your publication is evident by the fact that every single copy for the past year has been taken from our table by customers and not returned. . . . Accept my congratulations for the job you are doing.

B. Barnet Griffith
John H. Lewis & Co.
Colorado Springs, Colo.

* * *

Wrong Century

Editor:

Mr. Nelson, in his article "The Law of Trust Investment" F.A.J. July-August 1960, is 100 years out of the way. Justice Putnam's decision, Harvard College vs. Amory, was handed down in 1830.

Elisha P. Dodge
Vice President
Northeastern Pa. National
Bank and Trust Co.
Scranton, Pa.

(Sorry. A typographical error.—
Ed.).

* * *

First Impression: Good

Editor:

This is my first subscription to The Financial Analysts Journal. It is extremely interesting and most informative. I wouldn't be without it.

Mrs. Iva S. Brown
Altoona, Pa.

* * *

Thank You Gentlemen

Editor:

You may be interested in knowing that I plan on extensively using articles from your publication in a course in Security Analysis which I offer in the fall semester. I find your articles far superior to any textbook material that is available.

Robert L. Johnson
Professor of Finance
State University of S. D.
School of Business
Vermillion, South Dakota

FIFTEEN YEARS AGO IN THE JOURNAL

"There are few, if any, places in the world where the profit opportunities are as great as they are in the stock market. Fifty years ago, on Aug. 10, 1896, the first bull market, that is recorded by the Dow Jones Industrial Average, started at a level of 29.64. Since then this average has traveled a total distance of 1821 points between the tops and bottoms of 18 bull markets and 12 bear markets.

"At the present time it is selling 183 points higher than it did 50 years ago. It has traveled approximately 10 points in its major swings for each one point of net gain. Since it has pursued such an irregular course, we might also add that there are few places where the opportunities for loss are as great as they are in the stock market.

"Because both the proper timing of commitments, and the intelligent selection of individual securities, are so important in seeming stock market profits, the field of analytical work should face a brilliant future. Fortunately the sources of information and the methods of analysis are improving, so the rewards of good analysis should be greater. . . .

"When the market reaches a top, the news is generally the best it has been in the whole bull market phase. Earnings are high; dividends are increasing; the number of failures is low; and there is a general feeling of optimism. When the market is at the bottom of a bear market, the reverse is true. Then, earnings and dividends are declining; failures are increasing; and there is little current news to make one optimistic. Only by looking into future trends can the general market, or the individual security, be correctly appraised fundamentally."

—Ralph Rotnem

Editor:

Please allow me to compliment you on your outstanding publication which has the rare quality of being highly informative and entertaining at the same time.

Warren Ng
Sacramento, Calif.

* * *

Editor:

Congratulations on the July-August issue of The Journal. In my opinion this is an exceptional issue in editorial content. I particularly value the articles by Elsom, Nicholson, and Molo-dovskiy.

W. Edward Bell
Assistant Vice President
Crocier-Anglo National Bank
San Francisco

Baltimore competitive advantages



DIVIDENDS PAID ON
THE COMMON STOCK
CONTINUOUSLY FOR
HALF A CENTURY—ALWAYS
EARNED—NEVER REDUCED.

INCOME ACCOUNT FOR TWELVE MONTHS ENDED JUNE 30

	1960	1959
Operating Revenues—Electric.....	\$116,154,000	\$110,235,000
Gas.....	54,935,000	50,584,000
Steam.....	2,350,000	2,446,000
Total Operating Revenues.....	\$173,439,000	\$163,265,000
Total Operating Expenses.....	145,499,000	136,733,000
Operating Income.....	\$ 27,940,000	\$ 26,532,000
Other Income.....	654,000	585,000
Gross Income.....	\$ 28,594,000	\$ 27,117,000
Total Income Deductions.....	7,276,000	6,626,000
Net Income.....	\$ 21,318,000	\$ 20,491,000
Preferred Stock Dividends.....	1,279,000	1,279,000
Balance Available for Common Stock.....	\$ 20,039,000	\$ 19,212,000
Earnings Per Share of Common Stock.....	\$ 1.43	\$ 1.38

The "MORE" in BALTIMORE means exactly that. More productive capacity is a striking example. General Motors has begun an expansion which will nearly double its local facilities and make them the Chevrolet Division's second largest car and truck assembly plant. Bethlehem Steel is planning further additions to its highly efficient Baltimore plant which is already the largest in the nation. The combined capacity of the local plant of American Smelting and Refining and the recently erected plant of Kennecott Refining constitutes the largest concentration of electrolytic copper refining facilities in the country. These are representative of the growth constantly taking place in highly industrialized mid-Maryland, the area served by Baltimore Gas and Electric Company.



BALTIMORE GAS and ELECTRIC CO.



THE DAYTON POWER AND LIGHT COMPANY DAYTON, OHIO

152nd Common Dividend

The Board of Directors has declared a regular quarterly dividend of 60c per share on the Common Stock of the Company, payable on Sept. 1, 1960 to stockholders of record at the close of business on Aug. 15, 1960.

GEORGE SELLERS, Secretary
August 5, 1960



GENERAL PORTLAND CEMENT COMPANY

Common Stock Dividend

The Board of Directors of General Portland Cement Company has this day declared a quarterly dividend upon its Common Stock of 30 cents per share, payable September 30, 1960 to stockholders of record at the close of business on September 9, 1960. The stock transfer books will remain open.

HOWARD MILLER,
Treasurer
August 11, 1960

R. J. Reynolds Tobacco Company

Makers of
Camel, Winston, Salem & Cavalier
cigarettes
Prince Albert, George Washington
Carter Hall
smoking tobacco

QUARTERLY DIVIDEND

A quarterly dividend of 65c per share has been declared on the Common Stock of the Company, payable September 5, 1960 to stockholders of record at the close of business August 15, 1960.

WILLIAM R. LYBROOK,
Secretary
Winston-Salem, N. C.
July 14, 1960

Sixty Consecutive Years of
Cash Dividend Payments



BOOK REVIEWS

KREUGER: GENIUS AND SWINDLER. By Robert Shaplen. With introduction by John Kenneth Galbraith. New York: Alfred A. Knopf. 251 pages plus index. \$4.50.

The loot from King Solomon's Mines (B.C. and at whatever the exchange) was historically dwarfed by the plunder of modern man's greatest genius of evil: Ivar Kreuger, whose composition of a balance sheet was "almost poetic," for he thought that the functions of figures was mainly to create a profitable picture, *not* to portray the truth.

Author Shaplen has done a magnificent job of recreating this already legendary moneyman who was *en rapport* pillaging the capitals and Wall Streets of the world. Prime Ministers, a president of the United States and investment houses sought his advice; millions of dollars were risked on his judgment.

The author's extensive corporate research might well merit him an honorary membership in the *National Federation of Financial Analysts Societies*, and needless to add the arch-knave of whom he writes could have made it on his own (before, of course, the latter's mastery of intrigue, forgery, infamous deceit, double-entry bookkeeping and nefarious global machinations became publicly known).

Haroun-al-Rashid (of the Thousand and One Nights) would have doffed his turban to Kreuger as a munificent patron of romantic fraud.

Here is a particularly interesting book for all who enjoy storming the ramparts of finance and probing into the mind of a man who could have been, simultaneously, a star pupil of Machiavelli and a yeoman for Robin Hood.

The dollar rewards of craftily carrying a big wallet, combined with the

engaging charm of a well-modulated voice — and an apparent endless knowledge of the world's financial problems — paid handsome dividends to King Kreuger. However, this scoundrel broke his own inflated financial balloon amid tragic solitude and splendor—alone in his luxurious Paris apartment—when, at the age of 52, he pulled the trigger that sounded his demise.

In retrospect we wonder: had the now famous luncheon meetings of Financial Analysts Societies been organized in the 1920's—meetings at which captains of finance have been principal speakers for the past two decades — it's for certain that the Swedish Match King would have been invited. Yes, it's possible that he might have sought one of these influential audiences on his own initiative. Moreover, it's interesting to speculate about what this master of larceny might have said. And although he was eminently qualified to observe (as did a former president of the New York Stock Exchange, Emil Schram, before a luncheon meeting of Financial Analysts), that the financial profession offers a unique opportunity to be dishonest and that this should be constantly guarded against, we rather imagine that the Match King's address would have radiated more audacious double-talking charm than anticipated analytical information — for founded confidence was his game.

Here in this book is the fascinating account of the greatest swindler, amoral financier and con man of all times—"the Leonardo of their craft," the Napoleon of their hopes. Dollars were his soldiers and horizons his canvas.

Our final analysis: we join Economist Galbraith in recommending this biography of a bogus empire builder to everyone interested in finance. Read all about it!

HOW I MADE \$2,000,000 IN THE STOCK MARKET. By Nicholas Darvas. New York: The American Research Council: 178 pages. \$4.95.

Financial Analysts are often asked "if you're so smart why aren't you rich?" It was natural, therefore, that Author Darvas, a successful professional dancer who supposedly was not "investment" smart but who did become "investment" rich, should be asked: "How?"

As with most "how-to" books, this volume disappointingly ends up as a "how I—in spite of myself" reminiscence, with the wisdom of hindsight, and the confidence of "I did it all myself." The successful but reputedly unorthodox speculator, Mr. Darvas, discovers that he made his "2 Million in the Stock Market" by following two proven principles of profitable investing:

Buy the right stock at the right time; and maximize profits and minimize losses. To achieve these objectives he used two tools: Technical charts—Through market action of a stock, he tries to ascertain when the experts with their inside knowledge are buying. Stop-Loss Orders—Through these sales devices he attempts to limit losses to 10% and to safeguard profits on the way up.

Thus he recognizes that the professional can "buy cheap and sell dear," or "get in earlier than the other fellow." In its place he offers a simpler slogan for the "second guesser" to get in faster; i.e. "buy high and sell higher."

Since there are "no good or bad stocks, only rising and falling stocks," he suggests the following rules to help others to successfully "jog along with the trend."

1. "Adopt a cold and unemotional attitude toward stocks": Ignore tips and tapes, financial offices and opinions, and never adopt a pet or favorite.

2. "Operate in higher-priced stocks": Commissions are proportionately lower and theoretically only the more sophisticated and successful investor can afford to speculate in such high-price issues.

3. "Trade only in listed securi-

ties"; Unlike over-the-counter stocks, listed securities permit technical observation and always provide a sellers' market.

4. "Stay with a rising stock": Make a pilot purchase of stocks only after they have risen on volume. Average up as they continue to rise. Maintain the positions with "trailing stop-loss insurance."

5. "Be sure of fundamentals": Since "value is merely the quoted price of a stock," Mr. Darvas suggests two other approaches: Company should have a "definite upward trend in earning power"; and it should be a "pioneer in a new field" with "new products" in "scientifically inclined industries"—though he does not "care what product it makes."

The only serious objection to these rules of thumb, is the fact that *had Mr. Darvas followed them religiously he would not have made the millions he did.*

For example, had he not "given Thiokol greater leeway because I felt the stock," he would have been bumped out of his position on two different market reactions and not made as great a profit therein. In fact, similar failures to raise the stop-loss orders to within the 10% limit saved him in Zenith and Fairchild.

His profits in E. I. Bruce would not have been possible if the technical did not override the fundamental considerations. Further, if he did not forget the dangers of selling in the over-the-counter market, he would have sold at 77 instead of holding out for 171.

Technical observations, notwithstanding, he obviously got into Zenith too late, since the rise in its price after he positioned the stock was unspectacular compared to its pre-split rise.

Amusingly, his greatest percentage profits—Thiokol (246%) and Universal Controls (256%), (in contrast to 38% for Diners Club, 53% for Lorillard and 126% for Bruce)—came about because of neglect: "I was too busy to bother about them."

Perhaps what we can learn from

his book is that with a little bit of cash and some credit, a little bit of luck and some success, the analyst can gain self-confidence, so that he will act with the courage of his convictions and concentrate his investment in his next fundamental recommendation.

Reviewed by Frances Haidt

* * *

EXECUTIVES' GUIDE TO BUSINESS PROCEDURE: Checklists for Successful Management. Edited by Sidney Prerau. McGraw-Hill Publishing Co. 256 pages. \$4.95.

Mr. Prerau presents, in outline form, a list of specifics: to do-s and not to do-s, to look for-s; and to guard against-s—which management should take into consideration in handling various business problems.

Since Analysts are rarely called upon to plan office layouts, set up filing systems, or design business forms, the "how to-s" will be of limited interest. While the "what to study-s" may serve as guideposts for executives, they will be of little assistance to the Analyst in his appraisal of company management.

A solution to the present unenthusiastic investor interest in common stocks however, may lie hidden in Mr. Prerau's section on "replacing common stock or other securities with *preferred stock*." Investment bankers please note.

* * *

MARKETS OF THE SIXTIES. By the editors of Fortune. Harper & Brothers. New York. 266 pages. \$5.00.

Here's a book which many may think of as not essential in that the 12 chapters appeared (in somewhat different form) in Fortune's 59th and 60th volumes. But—let's face it—who has read every article in each issue of Fortune? Indeed, we (wryly) suspect that there are *some* Financial Analysts who haven't read every article of interest to them in *The Financial Analysts Journal*. And who would argue that an anthology (in either case) would not be of

considerable assistance? So it goes!

And while it's not possible to describe the many interesting contents of Fortune's 12 chapters, we are happy to present the headings:

The Future Population "Mix"; The 1960's: A Forecast of the Technology; How the U. S. Can Get 50% Richer; The Good Uses of \$750 Billion; The Decade of the "Discretionary" Dollar; The New Masses; How American Taste Is Changing; The Coming Changes in Housing; The "Ordinary" \$125 Billion Market; Detroit's Next Decade; The Long Decline of Public Transportation; and The Money Left Over for the Good Life.

It all makes good reading, whether or not you've read the articles in their entirety or in part. Fortune's editors have made an excellent selection.

IN MEMORIAM

Milton N. Hart, 57, a member of The Investment Analysts Society of Chicago. He was also a founding member of the Denver Society of Security Analysts, and served as its president in 1955. He was a director and vice president of The National Federation of Financial Analysts Societies. In his remembrance, the Denver Society has established a scholarship at Denver University. Mr. Hart was a graduate of Dartmouth College. He is survived by his wife, Alice Bentley Hart.



Dividend Notice

Broadview (Chicago suburb), Illinois—At a meeting of the Board of Directors of Amphenol-Borg Electronics Corporation held today a quarterly dividend of thirty-five cents (35¢) per share was declared payable September 30, 1960, to the stockholders of record at the close of business September 16, 1960.

FRED G. PACE, Secretary.
August 23, 1960.

The Financial **ANALYSTS JOURNAL**

PUBLISHED
by
THE
NATIONAL FEDERATION
OF
FINANCIAL ANALYSTS
SOCIETIES

Contents

Articles of particular interest to financial security analysts, to those engaged in investment management, and to the investor who is looking for the road to sound investments.

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**PUGET SOUND POWER
& LIGHT COMPANY**

**Common Stock Dividend
No. 68**

The Board of Directors has declared a dividend of 39¢ per share on Common Stock of Puget Sound Power & Light Company, payable August 15, 1960, to stockholders of record at the close of business July 22, 1960.

J. H. CLAWSON
President

**ELECTRIC
BOND AND SHARE
COMPANY**

New York, N. Y.

Notice of Dividend

The Board of Directors has declared a quarterly dividend of thirty cents (30¢) a share on the Common Stock, payable September 29, 1960, to share-owners of record at the close of business on September 8, 1960.

B. M. BETSCH,
Secretary and Treasurer

August 25, 1960.

Interlake Iron

DIVIDEND No. 65



Interlake Iron Corporation, Cleveland, has declared a dividend of 40 cents per share on its common stock, payable Sept. 30, 1960, to stockholders of record at the close of business Sept. 15, 1960.

J. P. Payne

Vice President & Tres.

Maker of Iron and Ferroalloye



**BALTIMORE GAS AND
ELECTRIC COMPANY**

*Serving one of America's
Great Industrial Centers*

QUARTERLY DIVIDENDS

Dividends of \$1.12½ a share on the 4½% Preferred Stock, Series B; \$1.00 a share on the 4% Preferred Stock, Series C; and 25 cents a share on the Common Stock, have been declared for the quarter ending September 30, 1960, all payable October 1, 1960, to holders of record at the close of business on September 15, 1960.

J. THEODORE WOLFE, President

Dividends paid on the Common Stock continuously for half a century—always earned—never reduced.

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**ALLEGHENY LUDLUM
STEEL CORPORATION**

PITTSBURGH, PENNA.

At a meeting of the Board of Directors of Allegheny Ludlum Steel Corporation held today, August 19, 1960, a dividend of fifty cents (50¢) per share was declared on the Common Stock of the Corporation, payable September 30, 1960, to shareholders of record at the close of business on September 9, 1960.



S. A. McCASKEY, JR.
Secretary

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**SOUTHERN
NATURAL GAS
COMPANY**

Birmingham, Alabama

Common Stock Dividend No. 86

A regular quarterly dividend of 50 cents per share has been declared on the Common Stock of Southern Natural Gas Company, payable September 14, 1960 to stockholders of record at the close of business on August 31, 1960.

W. S. TARVER,
Secretary

Dated: July 23, 1960.

**THE West Penn
Electric Company**

(Incorporated)

Quarterly Dividend

on 10%

COMMON STOCK

42½¢ PER SHARE

Payable September 30, 1960
Record September 9, 1960
Declared August 31, 1960

WEST PENN ELECTRIC SYSTEM
Monongahela Power Company
The Potomac Edison Company
West Penn Power Company



**GOULD-
NATIONAL
BATTERIES, INC.**

Manufacturers of a complete line of automotive, industrial and military storage batteries plus motive specialties.

**A REGULAR
QUARTERLY DIVIDEND**

of 30¢ per share on Common Stock, was declared by the Board of Directors on June 27, 1960 payable September 15, 1960 to stockholders of record on September 2, 1960.

This represents a 20% increase over the 50¢ quarterly dividend paid prior to the two-for-one stock split made on August 16, 1960.

A. H. DAGGETT
President

S. PAUL, MICH.



Plastic-foam pillow was one of the products made from Sinclair petrochemicals that stockholders saw.

All the Talk's about Sinclair Petrochemicals

Sinclair's continuing petrochemical progress was a prime topic of conversation at the Company's annual meeting of stockholders this year.

- The volume of chemical sales in 1959 doubled that of the previous year, and the 1960 volume to date is even better.
- Sinclair is now the largest producer of paraxylene, the basic raw material for polyester fibers used in the popular wash-and-wear fabrics.
- Sales of the plastic raw material, high purity propylene, first made in this country by Sinclair, are at an all-time high.
- In a joint undertaking with Koppers Company,

Inc., a major plant is being built at Houston, Texas to produce styrene monomer, a synthetic rubber and plastics raw material.

Stockholders were told that this rapidly expanding field is "an excellent route for product diversification, and an important new source of profits".



A Great Name in Oil

New steels are
born at
Armco

ARMCO STEEL TODAY... EXPANDING DIVERSIFIED WORLD-WIDE

That's the title of a new booklet about this billion-dollar steel corporation, its two divisions and four major subsidiaries, its 43,500 men and women, its 94 busy plants that span the free world, its modern research facilities—its accomplishments and its ambitions.

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